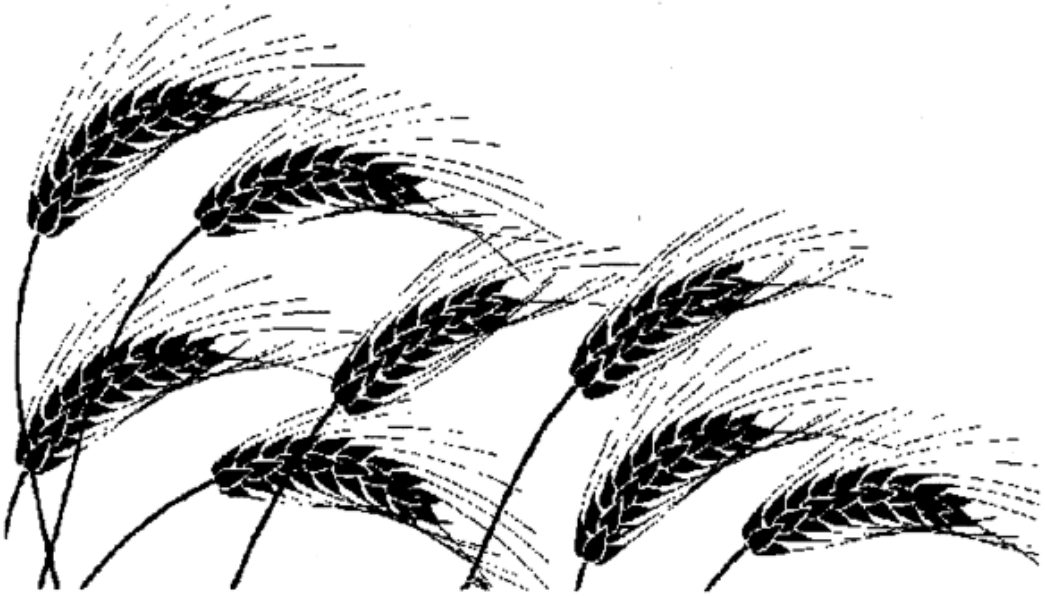
Reportable Diseases in Kansas

2002 Summary



Kansas Department of Health and Environment
Bureau of Epidemiology and Disease Prevention

REPORTABLE

INFECTIOUS DISEASES IN

KANSAS

2002 SUMMARY

December, 2003

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NOTES for 2002 Annual summary

This year's report has been less timely due to staff turn over and the process of converting the report production from the original software programs to different programs. This conversion will allow for better compilation of all the components of the report and will allow for the project to continue in a more streamlined fashion regardless of the persons involved in it's production.

The guidelines stated in the introduction are followed for this report i.e. there are no rates and no graphics that stratify factors for diseases with counts less than 50. Where the counts are large enough, graphs and charts may present rates. Some graphs and charts are presented using counts only and not ratess. Small numbers are always of concern in depicting disease information as it is important to maintain concern for presentation of potentially individually identifiable data.

This report has provided a foundation for a new approach to this document in the future. It is our desire to make this report a useful reference document and that will be evident in the upcoming 2003 Reportable Disease Summary. We welcome constructive suggestions and comments to that end.

Thank you for your patience, it is our privilege to serve the citizens of Kansas.

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INTRODUCTION

Purpose and format of this report

This is the eleventh annual summary of reportable diseases by the Kansas Department of Health and Environment (KDHE). The purpose of this report is to provide useful information about notifiable infectious diseases in Kansas for health care providers, public health workers and policy makers.

The report is divided into three sections. Section I presents summaries of 42 reportable diseases or conditions of public health importance in Kansas. Each of the diseases or conditions is presented with a brief overview of the disease or condition, laboratory tests commonly used for diagnosis, and the surveillance case definition. Tables and graphs supplement a summary of the disease in Kansas, including key statistics and trends. Only cases that meet a surveillance definition for a confirmed case and are reported before March 1, 2003 are presented here. Rates have been calculated from the U.S. Census Bureau and National Center for Health Statistics, Bridged 2002 Population Estimates. Rates by demographic characteristics and proportional changes from previous year are reported only then there were more that 50 cases of a disease reported in the state. Whenever possible, information about disease trends for the United States has been included for comparison with Kansas's trends. If the total number of cases in the state was less than 5, then only limited demographic information is presented due to confidentiality concerns.

Disease incidence of urban and non-urban counties has been included for many diseases. Urban counties are designated based upon population density. The five counties account for 50% of the population and include: Johnson, Wyandotte, Sedgwick, Shawnee, and Douglas. The remaining 100 counties in the state are aggregated into the "non-urban" category.

Data concerning race and ethnicity are collected uniformly for most diseases as follows: American Indian/Alaskan Native (AIAN), Asian/pacific Islander (API), Black- African-American, and White. Also reported for some diseases are rates for Hispanic and non-Hispanic ethnicity.

Section II includes special studies and reports. Section III provides reference documents including the reportable disease statutes, reportable diseases list and form, county abbreviations, county map of Kansas, summary tables of disease counts by county and disease counts of 10-year trend.

Disease reporting in Kansas

Selected dis3ases are reportable by law in Kansas by health care providers, laboratories and hospitals. Reports of infectious diseases are initially sent to local health departments. The local health departments are responsible for any investigation required and for instituting basic public health interventions such as administration of immune globulin to

household contacts of a person with Hepatitis A or treatment of sexual contacts of a person with gonorrhea.

Reports are also sent to the Bureau of Epidemiology and Disease Prevention (BEDP) in KDHE where they are reviewed. After reports have been entered into the Kansas integrated electronic disease surveillance system (also known as HAWK), weekly reports are transmitted to the Centers for Disease Control (CDC) and Prevention. There are specific reports required from states and these are accumulated for inclusion in the report published in the Morbidity and Mortality Weekly Report. Finally, CDC sends selected data to the World Health Organization.

HAWK is a central, statewide database of reportable and selected non-reportable diseases and/or conditions. It can be accessed internally and remotely/on-line only by authorized public health officials. To protect restricted, confidential, health and clinical data of individuals, internal security structures are in place. Users can report disease occurrences efficiently, and generate summary statistics and reports that can assist them in evaluating public health efforts in their local areas.

Surveillance for influenza is accomplished through a sentinel site surveillance method. During the 2002-2003 influenza season, the statewide physician-based active surveillance system included 21 sentinel sites including 9 family practices, 4 student health centers, 4 pediatricians, 3 long term care facilities and 1 military installation. To assess the possible amount and location of influenza activity, the number of patients seen with influenza-like illness (ILI), offices and clinics are contacted weekly by telephone starting in October 2002 and continuing through May 2003. These reports include number of persons with ILI by four age groups and total patient visits for all reasons. Ten sentinel sites agreed to continue to report ILI activity during the summer of 2003. State activity is reported to CDC weekly where it becomes part of the national influenza surveillance picture. Based on information submitted by each state to the CDC we are able to see where ILI is circulating thus the sentinel site surveillance plays an important role in monitoring influenza in the country.

In collaboration with the Council of State and Territorial Epidemiologists (CSTE), CDC publishes case definitions for public health surveillance, providing uniform criteria for reporting cases. This uniformity increases the specificity and comparability of diseases reported from different geographic regions. The CDC/CSTE surveillance case definitions combine clinical, laboratory, and epidemiologic criteria. The MMWR document of case definitions can be located on the web at the following address: http://www.cdc.gov/mmwr/preview/mmwrhtml/00047449.htm or using this reference - Case definitions for infectious conditions under public health surveillance. MMWR 1997; 46(no. RR-10).

The usefulness of public health surveillance data depends on its uniformity, simplicity, and timeliness. The case definitions in this report follow the CDC/CSTE surveillance definitions for disease reporting and should not be confused with clinical diagnoses. Use of additional clinical, epidemiologic, and laboratory data may enable a physician to

diagnose a disease even though the formal standardized surveillance case definition may not be met.

Interpretation of the data

When interpreting the data in this report, it is important to remember that disease reporting is incomplete and often varies by disease. For example, reporting of AIDS cases is estimated to be 90% complete whereas reporting of Salmonellosis on a national level is estimated to be 2% complete. Absolute numbers are less meaningful than trends when interpreting the data. However, trends can be influenced by changes in case definitions, reporting patterns, and by random fluctuations. It is also important to note that small numbers affect rates and interpretation of rates. Often, artificially high rates can be reported in the presence of small numbers as well as less stable, widely fluctuating trends.

Disease Highlights and trends 2002

STD

From January 1, 2002 to December 31, 2002 there were 39 cases of early syphilis reported. This is a 13 percent (6 case) decrease compared to the 45 cases reported in calendar year 2001. Ten or 26 percent (10/39) of these early syphilis cases can be attributed to a continuing outbreak within Topeka in the first half of 2002. The last reported early syphilis case in Topeka was in August 2002. These cases centered around commercial sex workers and methamphetamine/cocaine usage. Thirteen or 33 percent (13/39) of the early syphilis cases reported in 2002 were from an emerging outbreak in Johnson and Wyandotte Counties. This outbreak has crack (cocaine) usage and commercial sex workers as cofactors. Kansas had no reports of congenital syphilis in 2002.

For the year, 2,701 cases of gonorrhea were reported to the state. This is a 60 case decrease from 2001. These 60 cases represented a two percent decrease compared to last year. This is the second yearly decrease in reported gonorrhea cases in a row. Based on age reporting, young adults continued to have the highest rates of gonococcal infections; 34 percent (930) in the 20-24 age group, and 28 percent (749) by the 15-19 age group. Combined, both groups accounted for 62% (1,679) of all reported morbidity in 2002. Like syphilis, gonorrhea is concentrated in urban areas of the state.

Chlamydia continued to be the most commonly reported disease in Kansas. For the year, 6,758 cases of chlamydia were reported statewide, representing a nine percent (586 case) increase from the previous year. This was the first full year using a new test for chlamydia at the state laboratory. They went from DNA probe technology to amplified technology. The state lab reported 30 percent of all the Chlamydia cases in Kansas in 2002. Much of the nine percent increase can be attributed to the use of the more sensitive test. Reported chlamydia disproportionately affected females in their childbearing years. Forty percent (2,730) of all reported cases occurred in the 20-24 age group. This is

followed by the 15-19 age group, which accounted for 37 percent (2,516) of infections. Combined, the 15-24 age group accounted for 77% (5,246) of all chlamydia infections reported in 2002. Over 80 percent of reported cases occurred among females. This gender disparity reflects the focus of chlamydia detection activities in the state which target females.

Racial and ethnic minorities are disproportionately represented among cases of the three major reportable bacterial STDs, mirroring national trends. This may reflect reporting bias (e.g., African-Americans may use public STD clinics more often for health care and be more likely to be screened or reported if positive). Both syphilis and gonorrhea infections are largely confined to the urban areas of the state. At least one case of chlamydia occurred in 94 of the 105 counties in Kansas. These distributions also reflects national trends. The majority of syphilis cases are reported from public STD clinics, whereas chlamydia and gonorrhea infections are reported from private physicians. Nearly 66% of reported bacterial STD reports are from private providers rather than publicly funded STD and family planning clinics.

TB

Kansas reported 89 cases of active tuberculosis (TB) disease in 2002, up from 80 in 2001. In Kansas during 2002, the state's major metropolitan areas again reported the majority of cases of TB. Sedgwick County once again reported the highest number of new cases of active TB disease with 29. Fifty-four (61%) of the state's cases were among males and 35 (39%) were among females. In 2002, eight cases were reported among children under the age of 14, compared to six cases in 2001. Ten cases were reported for the age group 15-24; forty for the age group 25-44; eighteen for the age group 45-64; and thirteen among individuals over the age of 65. During 2002, there were four reported case of HIV co-infection and two cases of multi- drug resistant TB in the state.

The Kansas Department of Health and Environment dedicated many resources to investigation of an active case of TB diagnosed in one of the state prisons in 2002. The identification of this case uncovered many deficiencies in procedures used in county jails and state prisons. This inmate had been housed in three county jails over eight months prior to placement in the state prison system. Two of these county jails are considered overflow jails receiving a constant flow of multiple inmates from other counties who have maximized their local jail capacity. This inmate was symptomatic throughout all of these months. 318 contacts have been identified for this patient with contact investigations initiated on all contacts. To date, two active disease cases have been identified who were a cellmates of the index case at two of the county jails in 2002. In addition, 48 TB infections have been identified through this contact investigation. These infections represent 15% of those investigated as contacts to the source case. These activities have led to a significant increase in dialog and protocol review with the state prison system and many local jails.

Kansas Childhood Lead Poisoning Prevention Program

Based on the November 1997 Centers for Disease Control and Prevention (CDC) guidelines (*Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*), the Kansas Childhood Lead Poisoning Prevention Program (KCLPPP) developed and the Kansas Lead Council approved the universal *Kansas Blood Lead Testing Plan*. The *Kansas Blood Lead Testing Plan* has been distributed to over 1,200 healthcare providers across Kansas.

The Kansas case management plan was developed and implemented in 2002. *Case Management of the Lead Poisoned Child* was introduced during workshops in Kansas' communities. Explanation and demonstration of the care plan to healthcare providers and local health department staff was presented through these workshops.
Legislative action was taken in regard to reporting of blood lead levels. Kansas Administrative Regulation (K.A.R.) 28-1-18 was amended December 2, 2002, to require laboratories to report all blood lead levels to KDHE. Data received is entered into the STELLAR (Systematic Tracking of Elevated Lead Levels and Remediation) surveillance system. As of December 2002, 85% of the reporting laboratories are sending all test results to KCLPPP via electronic transmission and mailed hard copies.
KCLPPP Website: (different from last year) – www.unleadedks.com

SECTION I - DISEASE SUMMARIES

ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) and HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION

AIDS is a severe, life-threatening condition first recognized as a distinct syndrome in 1981. This syndrome is caused by the human immunodeficiency virus (HIV), a pathogen that damages the body's immune system. With a weakened immune system, other pathogens may easily invade the body, allowing opportunistic diseases to develop and cause death. Most people infected with HIV develop detectable antibodies within 1-3 months after infection, but may remain free of signs or symptoms for several months to years. Clinical illness may include lymphadenopathy, chronic diarrhea, weight loss, fever, and fatigue. The severity of HIV-related illness is, in general, directly related to the degree of immune dysfunction. The virus can be transmitted from person to person through unprotected sexual contact, sharing HIV-contaminated needles and syringes, from mother to infant, and transfusion of infected blood or its components. No vaccine exists for HIV infection, but considerable progress has been made in the development of anti-retro viral therapies, which slow viral progression and significantly reduce the amount of virus in an infected person.

HIV infection and AIDS are reportable in Kansas. A person previously reported as HIV infected is reported again as an AIDS case if an AIDS diagnosis is made.

Laboratory Criteria for Surveillance Purposes

AIDS

- Detection of either a) CD4+ T-lymphocytes/µL <200; b) a CD4+ T-lymphocyte percentage of total lymphocytes of <14%; or c) any of 24 specific diseases or syndromes.

HIV

- Western blot confirmed (positive/reactive) antibody test, HIV p24 antigen test, HIV nucleic acid (DNA or RNA) detection, HIV isolation (viral cultures).

Surveillance Case Definitions

AIDS

- All HIV-infected adolescents aged 13 years and adults who have either (a) a CD4+ t-lymphocyte count <200 or <14% or (b) been diagnosed with one of the AIDS defining opportunistic infections. Complete information on the case definition can be found in MMWR 1997; 46 (No. RR-10).

- The AIDS surveillance case definition for children aged <13 years includes the clinical conditions listed in the AIDS surveillance case definition found in MMWR 1997; 46 (No. RR-10).

HIV

- Laboratory criteria must be met.

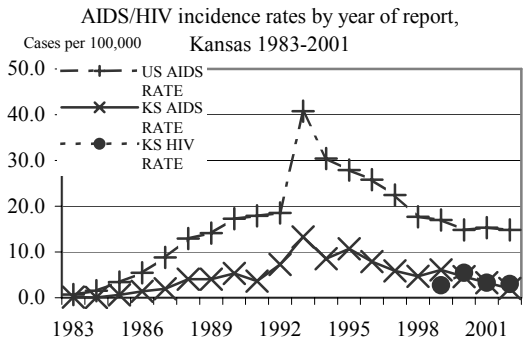
Note:

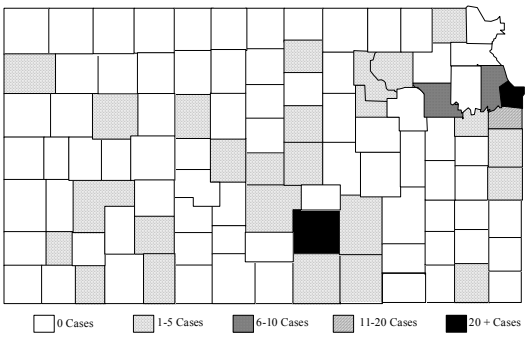
- The case definitions for adult and pediatric HIV infections have been expanded effective 1/1/2000. It includes HIV nucleic acid (DNA or RNA) detection tests (viral load tests) that were not available when the AIDS case definition was revised in 1993. The revised HIV case definitions in adults and children are outlined in MMWR 1999; 48 (No. RR-13: 1-31).
- More detailed information on AIDS is available in the Kansas AIDS/STD Update, the "HIV/AIDS Epidemiologic Profile", and www.kdhe.state.ks.us/hiv-std.

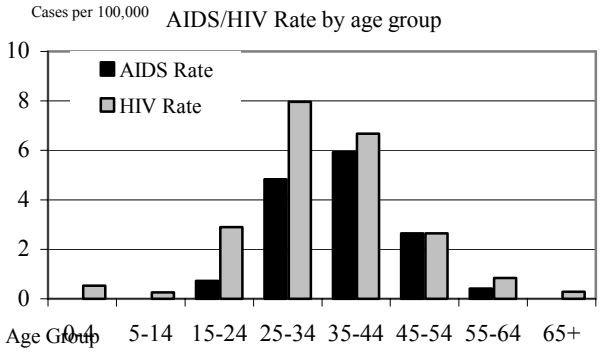
Epidemiology and Trends

AIDS

2002 Case Total	55
Kansas Rate	2.0 per 100,000
U.S. Rate	14.8 per 100,000
Rate by Gender	
Female	0.7 per 100,000
Male	3.4 per 100,000
Rate by race/ethnicity	
White (not Hispanic)	1.6 per 100,000
Black (not Hispanic)	6.6 per 100,000
Asian/Pacific Islander	0.0 per 100,000
American Indian	7.6 per 100,000
Hispanic	3.4 per 100,000
Rate by geographic area	
Urban	2.8 per 100,000
Rural	1.2 per 100,000







At the end of 2002, the state of Kansas HIV/STD Surveillance Program reported 1,003 individuals presumed to be living in Kansas and infected with AIDS. Included in the 1,003 cases are 55 new cases for 2002. The associated rate of infection for the new cases based on the entire state population is 2.0 per 100,000.

The age (at diagnosis) distribution for new cases from 2002 includes individuals ranging from 21 to 55 years old, with a median age of 37. Rates by race/ethnicity illustrate trends are similar to the national rates. However, the small minority populations in Kansas make it difficult to make conclusions based on the elevated rates for Blacks and American Indians.

Small fluctuations in case counts in these small populations can cause dramatic changes in the rates. The small population should therefore be considered when interpreting this data. The difference in Kansas between the males (3.4 per 100,000) and the females (0.7 per 100,000) represents the distribution of the disease burden where males account for 84 percent of all new AIDS cases in Kansas. Additionally, the five most populated counties in Kansas account for 50.4 percent of the state's population and 71 percent of the AIDS cases. The rate for these urban counties is 2.8 per 100,000 and the 100 non-urban counties in the state have a rate of 1.2 per 100,000.

One key to improving outcomes for patients is ascertainment of cases in HIV status before conversion to AIDS. According to the 17th edition of the *Control of Communicable Diseases Manual*, edited by Dr. James Chin, "without effective anti-HIV treatment, about half of infected adults will develop AIDS within 10 years after infection."* According to a study done by Neal and Fleming (CDC), "from 1994 through 1999, an estimated 43,089 (41%) had HIV diagnosed late."** Comparatively, the statistics for Kansas indicate that 57 percent of HIV cases are converting to AIDS within one year. These statistics indicate a need for improvement of prevention activities that aim to encourage earlier testing. Efforts to identify new cases before conversion from HIV to AIDS will improve the outcomes of the disease in Kansans. Additionally, increasing the number of persons aware of their true serostatus and equally improving access to care and prevention will likely increase the need for interventions to address newly identified cases

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Interval between 1st HIV positive test and AIDS diagnosis in Kansas, 2002

Interval	**2002**
≤ 1 year	33 (56.9%)
2-5 years	11 (19%)
> 5 years	14 (24.1%)
Total	58 (100%)

Note: This table represents the total number of cases diagnosed in 2002 and therefore totals differ from the first table, which uses the date of report for reference.

HIV

2002 Case Total	82
Kansas Rate	3.0 per 100,000
U.S. Rate	11.8 per 100,000
Rate By Gender	
Female	1.8 per 100,000
Male	4.2 per 100,000
Rate by race/ethnicity	
White (not Hispanic)	1.6 per 100,000
Black (not Hispanic)	12.0 per 100,000
Asian/Pacific Islander	1.7 per 100,000
American Indian	0.0 per 100,000
Hispanic	8.2 per 100,000
Rate by geographic area	
Urban	3.4 per 100,000
Rural	2.5 per 100,000

At the end of 2002, the state of Kansas HIV/STD Surveillance Program reported 931 individuals presumed to be living in Kansas and infected with HIV. Included in the 931 cases are 82 new HIV cases for 2002. The associated rate of infection for the new cases based on the entire state population is 3.0 per 100,000. This database is fluid in nature and these numbers represent the best possible count as of 12/31/2002.

The age (at diagnosis) distribution for new cases from 2002 includes individuals ranging from 0 to 67 years old, with a median age of 34. Rates by race/ethnicity illustrate trends are similar to the national rates. However, the small minority populations in Kansas make it difficult to make conclusions based on the elevated rates for Blacks and Hispanics. The difference in Kansas between the males (4.2 per 100,000) and the females (1.8 per 100,000) represents the distribution of the disease burden where males account for 71 percent of all new HIV cases in Kansas. Additionally, the five most populated counties in Kansas account for 50.4 percent of the state's population and 59 percent of the HIV cases. The rate for these urban counties is 3.4 per 100,000 and the 100 non-urban counties in the state have a rate of 2.5 per 100,000.

*Chin J. *Control of Communicable Diseases Manual*, 17th Edition. Washington, DC: American Public Health Association, 2000: 4.

**Neal JJ, Fleming PL. Frequency and predictors of late HIV diagnosis in the United States, 1994 through 1999. In: Final program and abstracts of the 9th Conference on Retroviruses and Opportunistic Infections, Seattle, Washington, February 24-28, 2992. Alexandria, VA: Foundation of Retrovirology and Human Health.

AMEBIASIS

Amebiasis* is an infection with the protozoan parasite *Entamoeba histolytica*. The intestinal form of the disease is usually asymptomatic, ranging from acute, mild abdominal discomfort to chronic diarrhea and fulminating dysentery. Fever, chills, and bloody mucoid diarrhea (amebic dysentery) are also present within two to four weeks of infection. Diarrheal episodes may alternate with periods of constipation or remission. The extraintestinal form appears in cases of amebic liver abscesses and may take weeks to months to develop. Transmission occurs mainly by ingestion of amebic cysts in fecally-contaminated food or water or through oral-anal sexual contact. The cysts are relatively chlorine resistant and are not reliably killed by routine drinking water chlorination processes; however, sand or diatomaceous earth filtration is effective in removing amebic cysts.

Laboratory Criteria for Surveillance Purposes

Intestinal amebiasis

- Demonstration of *E. histolytica* cysts or trophozoites in stool, ***or***
- Demonstration of trophozoites in tissue biopsy or ulcer scrapings by culture or histopathology.

Extraintestinal amebiasis

- Demonstration of *E. histolytica* trophozoites in extraintestinal tissue.

Surveillance Case Definitions

- *Confirmed,* ***intestinal*** *amebiasis:* clinically compatible illness that is laboratory confirmed.

- *Confirmed,* ***extraintestinal*** *amebiasis:* a parasitologically confirmed infection of extraintestinal tissue, or among symptomatic persons (with clinical or radiographic findings consistent with extraintestinal infection), demonstration of specific antibody against *E. histolytica* as measured by indirect hemagglutination or other reliable immunodiagnostic test (e.g., enzyme-linked immunoabsorbent assay).

* Amebiasis is not a nationally notifiable disease.

Epidemiology and Trends

2002 Case Total	4
Kansas rate	0.15 per 100,000
U.S. rate (2001)	N/A

In 2002, only four cases of amebiasis were reported compared to only two cases in 2001. The three-year median for 1999-2001 is five. Eighty-one cases of amebiasis have been reported in Kansas from 1993 to 2002. The largest annual figure was 22 cases in 1993 (27% of the 1993-2002 total); these were sporadic cases and no outbreaks were reported.

BOTULISM (including foodborne, wound, and infant botulism)

Botulism is a rare but serious neuroparalytic disorder caused by exposure to toxins produced by the bacterium C*lostridium botulinum.* The disease is classified into three forms according to the site of toxin production: foodborne, wound, and infant or intestinal. Foodborne botulism is characterized by cranial nerve impairment and descending paralysis and often causes visual difficulty, difficulty swallowing, and dry mouth within 12 to 48 hours after ingestion of food contaminated with preformed *C. botulinum* toxins. Though clinically similar to foodborne botulism, symptoms due to wound botulism appear 4 to 14 days after contamination of a wound with *C. botulinum*. Infant or intestinal botulism, the most common form of botulism, is characterized by the ingestion of the *C. botulinum* spores that invade the large intestine, release nerve toxins, and cause flaccid paralysis. Affecting primarily children less than one year of age, infant botulism begins with constipation 3 to 30 days after exposure to the spores, followed by lethargy, poor feeding, difficulty swallowing, and general loss of muscle control. Death due to respiratory insufficiency may also occur with infant botulism. Ubiquitous in soil, *C. botulinum* spores may frequently be found in soil, dust, or agricultural products, including honey.

Laboratory Criteria for Surveillance Purposes

Botulism, Foodborne

- Detection of botulinum toxin in serum, stool, or patient's food, or
- Isolation of Clostridium botulinum from stool

Botulism, Wound

- Detection of botulinum toxin in serum, or
- Isolation of Clostridium botulinum from wound

Botulism, Infant

- Detection of botulinum toxin in stool or serum, or
- Isolation of *Clostridium botulinum* from stool

Botulism, Other

- Detection of botulinum toxin in clinical specimen, or
- Isolation of Clostridium botulinum from clinical specimen

Surveillance Case Definitions

Botulism, Foodborne

- *Probable*: a clinically compatible case with an epidemiologic link (e.g., ingestion of a home-canned food within the previous 48 hours)
- *Confirmed*: a clinically compatible case that is laboratory confirmed or that occurs among persons who ate the same food as persons who have laboratory-confirmed botulism

Botulism, Wound

- Confirmed: a clinically compatible case that is laboratory confirmed in a patient who has no suspected exposure to contaminated food and who has a history of a fresh, contaminated wound during the 2 weeks before onset of symptoms

Botulism, Infant

- Confirmed: a clinically compatible case that is laboratory-confirmed, occurring in a child aged less than 1 year

Botulism, Other

- Confirmed: a clinically compatible case that is laboratory confirmed in a patient aged greater than or equal to 1 year who has no history of ingestion of suspect food and has no wounds

Epidemiology and Trends

2002 Case Total	1
Kansas rate	<0.1 per 100,000
U.S. rate (2001)	<0.1 per 100,000

In 2002, there was one case of infant botulism identified in Kansas. The case was hospitalized but no death was reported. This represents the first case of botulism reported in Kansas since 1996, during which one case of infant botulism was reported.

CAMPYLOBACTERIOSIS

Campylobacteriosis is an acute zoonotic bacterial enteric disease caused by *Campylobacter spp.*, most commonly *Campylobacter jejuni*. Illness occurs within 2-5 days of infection and is characterized by diarrhea, abdominal pain, malaise, fever, nausea and vomiting. Occasionally, long-term consequences may result from a *Campylobacter* infection, including Guillain-Barré syndrome (GBS), a rare disease that affects the nerves of the body. Infections due to *Campylobacter jejuni* are mostly associated with handling raw poultry or eating raw or undercooked poultry meat. Transmission may also occur after ingestion of contaminated liquids, particularly untreated water or unpasteurized milk and juices. Direct contact with fecal material from infected animals or through person-to-person contact occurs less frequently.

Laboratory Criteria for Surveillance Purposes

- Isolation of *Campylobacter* from any clinical specimen.

Surveillance Case Definitions

- *Probable:* a clinically compatible case that is epidemiologically linked to a confirmed case
- *Confirmed:* a case that is laboratory confirmed

Outbreaks

In April 2002, the Butler County Health Department (BCHD) and Epidemiologic Services (ES) investigated an outbreak of campylobacteriosis among 85 children and adults who had visited a dairy farm on one of two days. Two-thirds of the attendees experienced diarrhea (either watery or bloody), abdominal cramps, nausea, vomiting, and fever 2-5 days after consumption of unpasteurized raw milk. Laboratory results of stool samples taken from six ill individuals confirmed Campylobacter jejuni. *The six samples had indistinguishable pulsed-field gel electrophoresis (PFGE) patterns when further analyzed.*

Information collected during the retrospective cohort study revealed that three out of four exposed individuals became ill with diarrhea and abdominal cramping, demonstrating a 77% attack rate among those who drank the unpasteurized milk. Moreover, 100% of the ill individuals reported consumption of the raw milk. Secondary transmission occurred in seven household contacts. Four milk samples were collected from the dairy farm to be tested, and laboratory results were reported as inconclusive.

Epidemiology and Trends

2002 Case Total 284

Kansas Rate 10.5 per 100,000
U.S. Rate (2001) N/A

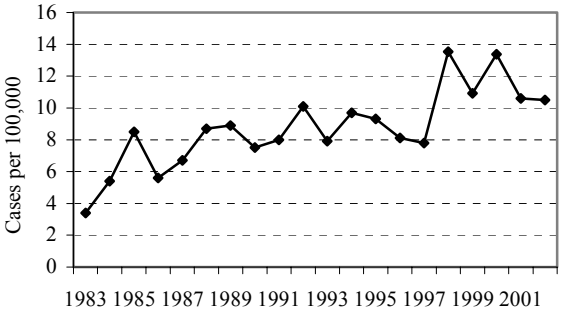
Rate by gender
Female 9.0 per 100,000
Male 11.5 per 100,000

Rate by race
White 8.0 per 100,000
Black 5.2 per 100,000
Asian/Pacific Islander
3.3 per 100,000

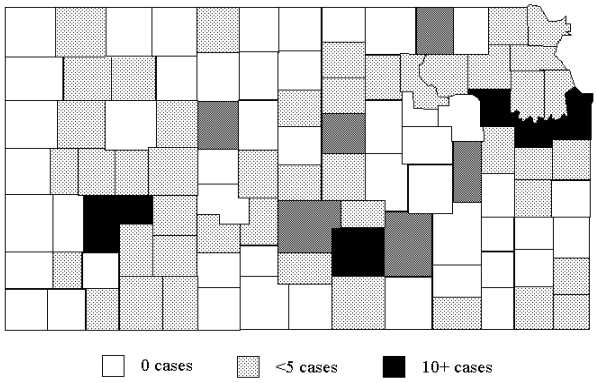
Rate by ethnicity
Hispanic 10.2 per 100,000
Non-Hispanic 6.6 per 100,000

Rate by geographic area
Urban 10.2 per 100,000
Non-Urban 10.7 per 100,000

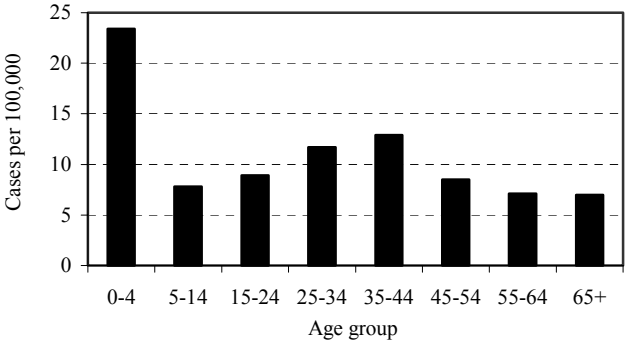
Campylobacteriosis rate by year
Kansas, 1983-2002



Campylobacteriosis counts by county
Kansas, 2002



Campylobacteriosis rate by age group
Kansas, 2002



Campylobacteriosis is one of the most commonly reported gastrointestinal illnesses in Kansas. In 2002, 284 cases were reported, 2 cases less than the numbers reported in 2001 despite the outbreak described on the previous page. The three-year median for 1999-2001 was 290 cases. The cases ranged in age from less than 1 year to 86 years of age. The median age was 31 years and the highest incidence rate occurred in those under 5 years of age (23.4/100,000); 55% of the cases were in

males. Sixty-nine percent of cases were Whites, <1% Asian/Pacific Islanders, 3% African-Americans, and in 27% of cases race was not reported. The ratio of cases reported from urban areas to rural areas was about 1:1. Of the cases reported, a serotype was identified for 148 (52%), of which 147 (99%) were *C. jejuni* and 1 (1%) was *C. lardis*.

CHLAMYDIA

Chlamydia trachomatis is a sexually transmitted genital infection. Chlamydia is primarily manifests as urethritis in males and as mucopurulent cervicitis in females. Asymptomatic infections are common. Clinical manifestations of urethritis are often difficult to distinguish from gonorrhea and include mucopurulent discharges of scanty or moderate quantity, urethral itching, and burning on urination. The incubation period is poorly defined -- it is estimated to be at least 7-14 days. Chlamydia complications in males include epididymitis, a condition that can lead to sterility. Common complications in women include salpingitis and chronic infection of the endometrium and fallopian tubes. These complications can lead to infertility and ectopic pregnancies. Endocervical chlamydia infection has been associated with increased risk of HIV infection. Perinatal infections may result in inclusion conjunctivitis and pneumonia in newborns. Individuals who engage in receptive anorectal intercourse may develop chlamydia proctitis.

Laboratory Criteria for Surveillance Purposes

- Isolation of *C. trachomatis* by culture, ***or***
- Demonstration of *C. trachomatis* in a clinical specimen by detection of antigen or nucleic acid.

Surveillance Case Definitions

- *Confirmed:* a case that is laboratory confirmed.
- *Probable:* a written morbidity report of chlamydia submitted by a physician.

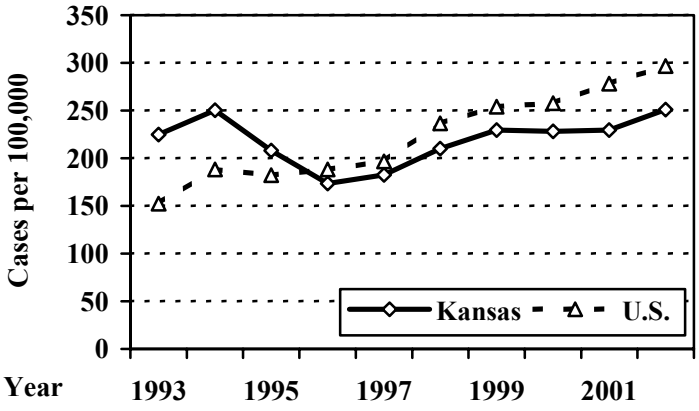
Comment

Chlamydia became reportable in 1985 in Kansas. Statewide screening began in 1990, targeting females 29 years of age and younger. The current screening guidelines target all female STD and prenatal clinic patients, all females 24 years of age and younger that visit family planning clinics, and all females that are sexual partners to patients diagnosed with an STD or with symptoms suggestive of an STD. More detailed information on STDs in Kansas is available at: www.kdhe.state.ks.us/hiv-std

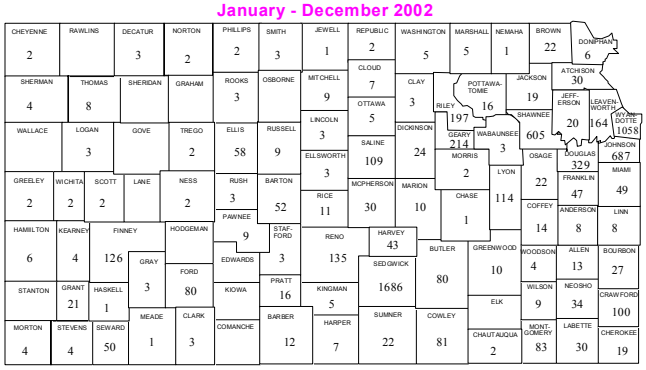
Epidemiology and Trends

2002 Case Total	6758
Kansas Rate	251 per 100,000
U.S. Rate (2001)	278 per 100,000
Rate by gender	
Female	417 per 100,000
Male	85 per 100,000
Rate by race[*]	
White	128 per 100,000
Black	1196 per 100,000
Asian/Pacific Islander	148 per 100,000
Native American	325 per 100,000
Hispanic	449 per 100,000
Rate by geographic area	
Urban	297.9 per 100,000
Non-Urban	162.4 per 100,000

Chlamydia Incidence Rate by Year
1993 - 2002

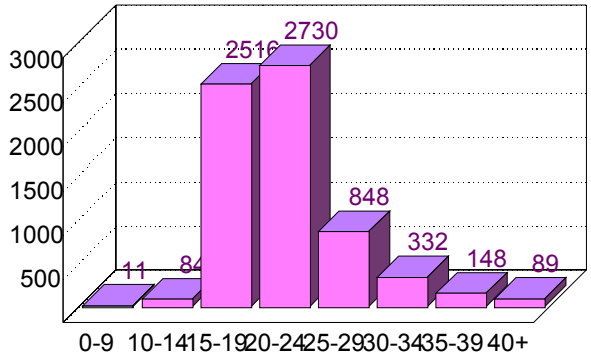


State of Kansas
Reported Cases of Chlamydia by County
January - December 2002



Total 6758

State of Kansas
Reported Cases of Chlamydia by Age
January - December 2002



Total 6758

[*] The STD program at KDHE designates "Hispanic" as a race category and therefore analysis by Hispanic ethnicity is not presented.

Chlamydia trachomatis continued to be the most frequently reported sexually transmitted disease in Kansas, with 94 of 105 counties reporting at least one case in 2002. A total of 6,758 chlamydia infections were reported during 2002, higher than the three-year median (for 1998-2000) of 6,093. There has been an upward trend since 1995, but the Kansas rate has remained below the national rate during the time.

The cases ranged in age from 0 to 80 years with a median age of 21. Females accounted for 83% of the reported cases and 77% of all reported cases in 2001 occurred in the 15-24 year old age group. This figure may reflect the focused screening efforts among women.

Whites account for more cases than any other race, but the case rates for other races is higher than Whites. Members of the African-American population were disproportionately affected by chlamydia during 2002. This may reflect reporting bias. The largest number of cases and highest rates occurred in the four largest metropolitan areas which accounted for 65% of the cases but 49% of the state's total population.

In 2002, a total of 34,018 tests were performed by Kansas Health and Environmental Laboratory, Sedgwick and Wyandotte County laboratories with an overall chlamydia positivity rate of 5.9% (2.008/34,018).

CRYPTOSPORIDIOSIS

Cryptosporidiosis is caused by the parasite *Cryptosporidium parvum* and is characterized by diarrhea, abdominal cramps, loss of appetite, low-grade fever, nausea, and vomiting. The incubation period of infection is not precisely known, but 1-12 days is the likely range. Symptoms often wax and wane and disappear in less than 30 days in most immunologically healthy people. Among severely immunocompromised persons, the disease may be prolonged and life-threatening. Asymptomatic infections are also common. The source of the infection is usually stools from infected individuals or animals, and the mode of transmission is by fecal-oral contact. Hands may become contaminated with parasites from improper handwashing after toileting or diapering. Pets, farm animals, and unpasteurized milk may also transmit the parasite. Outbreaks have been associated with drinking contaminated water, bathing in contaminated swimming pools and lakes, and drinking unpasteurized apple cider. Normal water chlorination processes are not effective against the oocyst form of the parasite. However, heating water to 45^{o}C (113^{o}F) for 5-20 minutes, 60 ^{o}C (140 ^{o}F) for 2 minutes, or chemical disinfection with 10% formalin or 5% ammonia solution is effective.

Laboratory Criteria for Surveillance Purposes

Laboratory-confirmed cryptosporidiosis shall be defined as the detection – in symptomatic or asymptomatic persons – of *Cryptosporidiosis*

- oocysts in stool by microscopic examination, or in intestinal fluid or small-bowel biopsy specimens, or
- oocyst or sporozoite antigens by immunodiagnostic methods (e.g. ELISA) or by PCR techniques when routinely available, or
- demonstration of reproductive stages in tissue preparations.

Surveillance Case Definitions

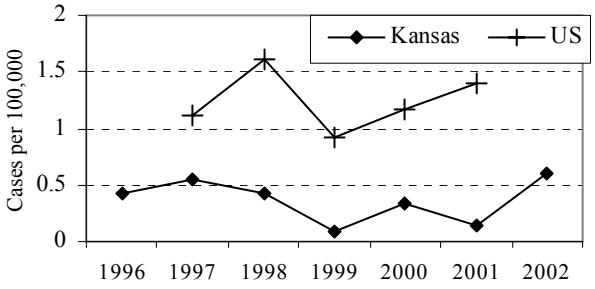
- *Confirmed, asymptomatic*: a laboratory-confirmed case not associated with any of the above symptoms

- *Confirmed, symptomatic*: a laboratory-confirmed case associated with any of the above symptoms

Epidemiology and Trends

2002 Case Total	16
Kansas rate	0.6 per 100,000
U.S. Rate (2001)	1.4 per 100,000
Rate by Gender	
Female	0.6 per 100,000
Male	0.6 per 100,000
Rate by geographic area	
Urban	0.5 per 100,000
Rural	0.7 per 100,000

Cryptosporidiosis incidence rate by year
Kansas, 1995-2002



In 2002, there were 16 cases of cryptosporidiosis reported in Kansas, a fourthfold increase from 4 cases in 2001. Cryptosporidiosis has been a reportable disease in Kansas since 1996. The three-year median for 1999-2001 was 9 cases. The largest number of cases (31) was reported in 1995; twenty-four cases were related to an outbreak associated with a swimming pool.

DIARRHEA-CAUSING *Escherichia coli* (including Hemolytic Uremic Syndrome)

Although most strains of *E. coli* are harmless and live in the intestines of healthy humans and animals, at least five strains of diarrhea-producing *Escherichia coli* bacteria have been identified: Shiga toxin-producing *E. coli* (STEC), enteropathogenic *E. coli* (EPEC), enterotoxigenic *E. coli* (ETEC), enteroinvasive *E. coli* (EIEC), and enteroaggregative *E.coli* (EAEC). The most virulent of these strains is STEC, formally known as enterohemorrhagic *E. coli* (EHEC), of which *E. coli* O157:H7 is the predominant serotype. Illness due to STEC is usually self-limiting and consists of severe abdominal cramping and bloody diarrhea that appear three to four days after infection. Serious clinical manifestations, including hemolytic-uremic syndrome (HUS), a complication that alters normal kidney function, and postdiarhreal thrombotic thrombocytopenic purpura (TTP), a blood and kidney illness that affects the nervous system, may occur, particularly among immunocomprised individuals, young children, and the elderly. Most cases of HUS occur after an acute gastrointestinal illness. Some evidence has suggested that the use of antimicrobial therapy may precipitate complications like HUS.

Transmission of STEC strains occurs via the fecal-oral route, during which susceptible individuals ingest food or liquids contaminated with human or animal feces. Outbreaks of STEC infections have been linked to eating undercooked ground beef, consuming contaminated produce, and drinking contaminated water or unpasteurized juice. Person-to-person transmission may also occur, especially among daycare settings and nursing homes.

Laboratory Criteria for Surveillance Purposes

- Isolation of *Escherichia coli* O157:H7 from a specimen[1], or
- Isolation of Shiga toxin-producing *E. coli* from a clinical specimen[*]

Surveillance Case Definitions

Enterohemorrhagic E. coli

- *Confirmed*: A case that meets the laboratory criteria for diagnosis.
- *Probable*:
  - A case with isolation of *E. coli* O157 from a clinical specimen, pending confirmation of H7 or Shiga toxin production, or
  - A clinically compatible case that is epidemiologically linked to a confirmed or probable case, or
  - Identification of Shiga toxin in a specimen from a clinically compatible case, or

[1] K.A.R. 28-1-18 requires that isolates be sent to the KDHE Laboratory.

[*] Shiga toxin enzyme immunoassay (EIA) laboratory methods only identify the presence of Shiga toxin in a clinical specimen and should not be used as a confirmatory test. Any Shiga toxin positive stool should be sent to the KDHE Laboratory for further identification. K.A.R. 28-1-18 also requires that isolates of positive cultures of *E. coli* O157:H7 and other EHEC, EPEC, and ETEC be sent to the KDHE Laboratory.

- Definitive evidence of an elevated antibody titer to a known EHEC (also known as STEC) serotype from a clinically compatible case

➢ *Suspect*: A case of postdiarrheal HUS or TTP

Hemolytic Uremic Syndrome

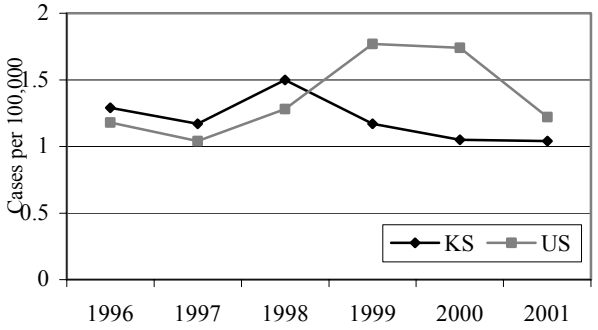
➢ *Probable*:
- An acute illness diagnosed as HUS or TTP that meets the laboratory criteria in a patient who does not have a clear history of acute or bloody diarrhea in preceding 3 weeks or
- An acute illness diagnosed as HUS or TTP, that a) has onset within 3 weeks after onset of an acute or bloody diarrhea and b) meets the laboratory criteria except that microangiopathic changes are not confirmed

➢ *Confirmed*: an acute illness diagnosed as HUS or TTP that both meets the laboratory criteria and began within 3 weeks after onset of an episode of acute or bloody diarrhea

Epidemiology and Trends

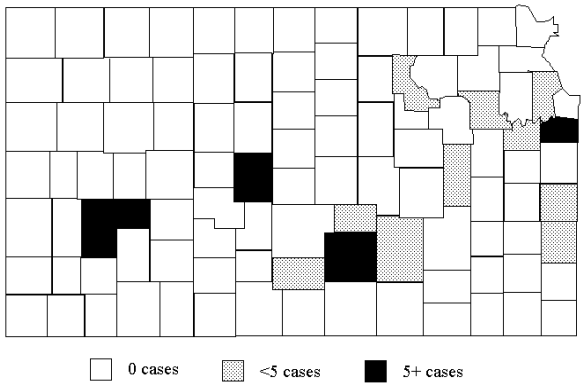
2002 Case Total	41
Kansas Rate	1.5 per 100,000
U.S. Rate (2001)	1.2 per 100,000
Rate by Gender	
Female	1.6 per 100,000
Male	1.4 per 100,000
Rate by race	
White	1.2 per 100,000
Black	1.2 per 100,000
Asian/Pacific Islander	1.7 per 100,000
Rate by ethnicity	
Hispanic	0.5 per 100,000
Non-Hispanic	1.2 per 100,000
Rate by geographic area	
Urban	1.4 per 100,000
Non-Urban	1.6 per 100,000

E. coli O157:H7 rates by year
Kansas, 1996-2001

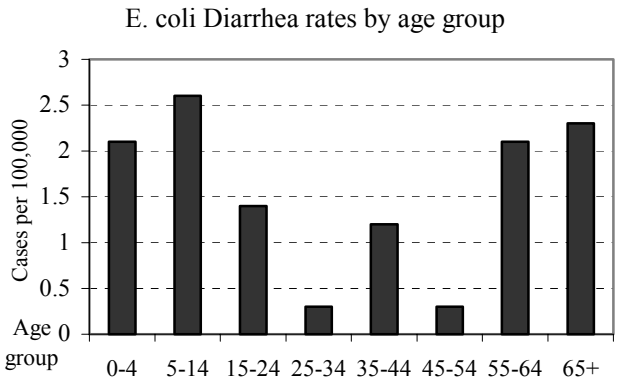


NOTE: Other enterohemorrhagic, enteropathogenic and enteroinvasive E. coli data are not included in this graph

E. coli Diarrhea counts by county
Kansas, 2002



There were 44 cases of diarrhea-producing *E. coli* reported in Kansas in 2002. Thirty-two cases of *E. coli* O157:H7, and 8 cases of Enterotoxigenic *E. coli* were reported. One case of hemolytic uremic syndrome was reported. All reported cases were apparently sporadic cases; no outbreaks were detected in 2002. The cases ranged in age from less than 1 year to 90 years of age, with a median age of 24 years. The highest incidence occurred in persons between the ages of 5 and 14 years.



EHRLICHIOSIS

Human Ehrlichiosis is a tickborne disease whose first cases were described in the United States in 1987. It is an acute, febrile, bacterial illness caused by several bacterial species in the genus *Ehrlica.* Three species of *Ehrlichia* in the United States and one in Japan are currently known to cause disease in humans. The form most commonly seen in Kansas and other upper mid-western states is known as human granulocytic Ehrlichiosis (HGE) transmitted by *Ixodes* spp. ticks. The form most common in the southeastern states is *Ehrlichia chaffeensis* transmitted by the Lone Star tick. (*Amblyomma americanum*). The spectrum of disease ranges from subclinical infection or mild illness to a severe life threatening or fatal disease. Both forms are commonly characterized by an acute onset of headache, fever, myalgia, rigors and/or malaise with leukopenia, thrombocytopenia and elevated liver enzymes.

Laboratory Criteria for Surveillance Purposes

- Demonstration of a four-fold change in antibody titer to *E. chaffeensis* antigen by indirect immunofluorescence assay (IFA) in paired serum samples, or
- Positive polymerase chain reaction (PCR) assay and confirmation of *E. chaffeensis* DNA, or
- Identification of morulae in leukocytes, and a positive IFA titer to *E. chaffeensis* antigen (based on cutoff titers established by the laboratory performing the assay), or
- Immunostaining of *E. chaffeensis* antigen in a biopsy or autopsy sample, or
- Culture of *E. chaffeensis* from a clinical specimen.

- Demonstration of a four-fold change in antibody titer to *E. phagocytophila* antigen by IFA in paired serum samples, or
- Positive PCR assay and confirmation of *E. phagocytophila* DNA, or
- Identification of morulae in leukocytes, and a positive IFA titer to *E. phagocytophila* antigen (based on cutoff titers established by the laboratory performing the assay), or
- Immunostaining of *E. phagocytophila* antigen in a biopsy or autopsy sample, or
- Culture of *E. phagocytophila* from a clinical specimen.

- Demonstration of a four-fold change in antibody titer to more than one *Ehrlichia* species by IFA in paired serum samples, in which a dominant reactivity cannot be established, or
- Identification of an *Ehrlichia* species other than *E. chaffeensis* or *E. phagocytophila* by PCR, immunostaining, or culture.

Surveillance Case Definitions

- *Probable*: a clinically compatible illness with either a single positive IFA titer (based on cutoff titers established by the laboratory performing the test) or the visualization of morulae in leukocytes.
- *Confirmed:* a clinically compatible case that is laboratory confirmed.

Epidemiology and Trends

2002 Case Total	3
Kansas rate	0.04 per 100,000
U.S. rate (2001)	N/A

In 2002, there were 3 cases of ehrlichiosis reported. In Kansas, Ehrlichiosis became reportable in the year 2000. 1n 2001, 5 cases were reported. All 3 cases for the year 2002 were reported from the eastern portion of the state: two human granulocytic and one human monocytic. Only one case reported a tick bite. From another case, there was no history of tick bite, but a positive test for E. *chaffennsis*.

ENCEPHALITIS, OTHER INFECTIOUS
(West Nile Virus encephalitis/meningitis discussed separately)

Infectious encephalitis is an acute inflammatory process of short duration involving parts of the brain, spinal cord and meninges. Infectious agents associated with encephalitis may be viral, fungal, or bacterial. Signs and symptoms of these diseases are similar but vary in severity and rate of progress. Severe infections are usually marked by acute onset, headache, high fever, stupor, disorientation, coma, tremors, occasionally convulsions (especially in infants), and paralysis. The incubation period and mode of transmission varies depending on the infectious agent.

Laboratory Criteria for Surveillance Purposes

- Fourfold or greater change in serum antibody titer,
  OR
- Isolation of infectious agent from or demonstration of viral antigen or genomic sequences in tissue, blood, cerebrospinal fluid (CSF), or other body fluid, ***or***
- Specific immunoglobulin M (IgM) antibody by enzyme immunoassay (EIA) antibody captured in CSF or serum. Serum IgM antibodies alone should be confirmed by demonstration of immunoglobulin G antibodies by another serologic assay (e.g., neutralization or hemagglutination inhibition).

Surveillance Case Definitions

- *Confirmed:* a clinically compatible case that is laboratory confirmed.
- *Probable:* a clinically compatible case and with supportive, but not definitive serology.

Epidemiology and Trends

2002 Case Total	1
Kansas rate	0.04 per 100,000
U.S. rate (2002)	Non-notifiable as an infectious disease nationally

In 2002, one confirmed infectious encephalitis cases was reported in Kansas. The identified organism was herpes simplex I.

GIARDIASIS

Giardiasis* is a gastroenteric infection caused by *Giardia lamblia*, a one-celled, microscopic parasite that resides in the intestines of humans and wild and domestic animals. The most common symptoms are chronic diarrhea, abdominal cramps, bloating, and loose and pale, greasy stools. Symptoms appear 1-2 weeks after exposure to the protozoan and often lead to weight loss and dehydration. Asymptomatic infections and prolonged shedding in the feces are common. Transmission through the fecal-oral route, person-to-person, especially in institutions and day care centers, and animal-to-person are the principal modes of spread. Ingestion of contaminated drinking or recreational water is also potential sources of infection. Transmission through fecally contaminated food is rare.

Laboratory Criteria for Surveillance Purposes

- Demonstration of *G. lamblia* cysts in stool, or
- Demonstration of *G. lamblia* trophozoites in stool, duodenal fluid, or small-bowel biopsy, or
- Demonstration of *G. lamblia* antigen in stool by a specific immunodiagnostic test (e.g., enzyme-linked immunosorbent assay)

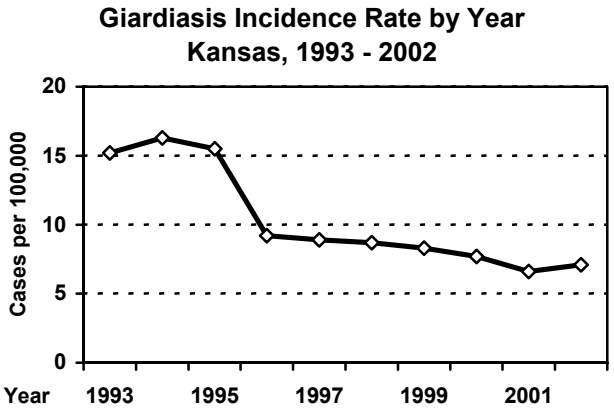
Surveillance Case Definitions

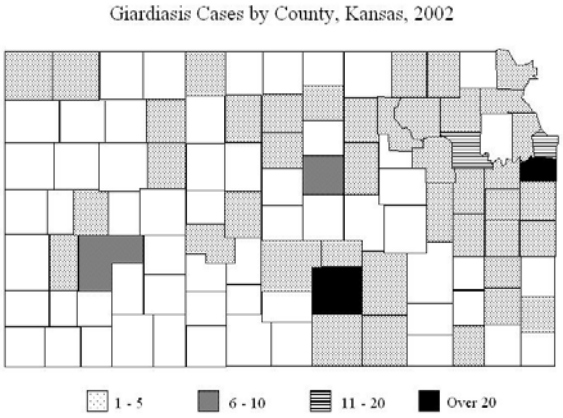
- *Probable:* a clinically compatible case that is epidemiologically linked to a confirmed case.
- *Confirmed:* a case that is laboratory confirmed.

* Giardiasis was added to the list of nationally notifiable diseases in 2002.

Epidemiology and Trends

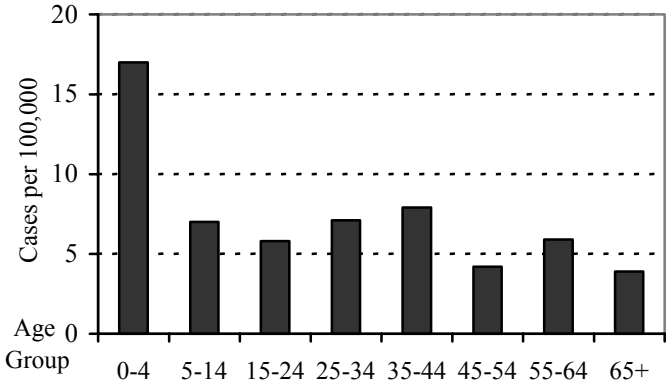
2002 Case Total	193
Kansas Rate	7.1 per 100,000
U.S. Rate (2001)	N/A
Rate by gender	
Female	7.9 per 100,000
Male	6.3 per 100,000
Rate by race	
White	5.3 per 100,000
Black	1.7 per 100,000
Asian/Pacific Islander	10.0 per 100,000
Native American	3.3 per 100,000
Rate by ethnicity	
Hispanic	1.9 per 100,000
Non-Hispanic	5.0 per 100,000
Rate by geographic area	
Urban	8.1 per 100,000
Non-Urban	6.1 per 100,000





In Kansas, there were 193 cases of giardiasis reported in 2002, an 8% increase compared to 178 cases in 2001. The three-year median for 1999-2001 was 205 cases. The cases ranged in age from less than 1 year to 79 years of age, with a median age of 29 years. This disease continues to affect primarily those less than 5 years of age with an incidence rate of 17 cases per 100,000 population. The majority of cases were Whites (67%), with an incidence rate of 5.3/100,000. Among specific counties, Johnson county had the largest number of reported cases, followed by Sedgwick county. There were no giardia outbreaks reported or identified in Kansas in 2002.

Giardiasis rate by age group



GONORRHEA

Gonorrhea is a bacterial infection caused by *Neisseria gonorrhea*. Symptoms of gonorrhea usually appear within two to 10 days after sexual contact with an infected partner, although a small percentage of patients may be infected for several months without showing symptoms. In males it is usually characterized by a purulent urethral discharge and dysuria. In females, there is an initial urethritis or cervicitis, often so mild it may pass unnoticed. Dependent upon sexual practices, pharyngeal and anorectal infections can occur. In males, the urethral infection is usually self-limiting; however, it may progress to epididymitis, and in rare cases, it can disseminate into an arthritis-dermatitis syndrome, endocarditis, and meningitis. Twenty percent of women infected with gonorrhea may develop uterine infection that may progress to endometritis, salpingitis or pelvic inflammatory disease (PID), and risk of infertility. Perinatal infections may result in inclusion conjunctivitis and pneumonia in newborns. Gonorrhea infection has been associated with increased risk of Human Immunodeficiency Virus infection (HIV).

Laboratory Criteria for Surveillance Purposes

- Isolation of typical gram-negative, oxidate-positive diplococci (presumptive *Neisseria gonorrhea*) from a clinical specimen, ***or***
- Demonstration of *N. gonorrhea* in a clinical specimen by detection of antigen or nucleic acid, ***or***
- Observation of gram-negative intracellular diplococci in a urethral smear obtained from a male.

Surveillance Case Definitions

- *Confirmed:* a case that is laboratory confirmed.
- *Probable:* (a) demonstration of gram-negative intracellular diplococci in an endocervical smear obtained from a female ***or*** (b) a written morbidity report of gonorrhea submitted by a physician.

Comments

The gonorrhea screening program began in Kansas in 1973, providing testing in STD, prenatal, family planning, student health and prison facilities. The STD program contracts with Sedgwick and Wyandotte County Health Department Laboratories to perform tests for selected physicians in these communities. KDHE laboratories process specimens from public or private clinics in other parts of the state.

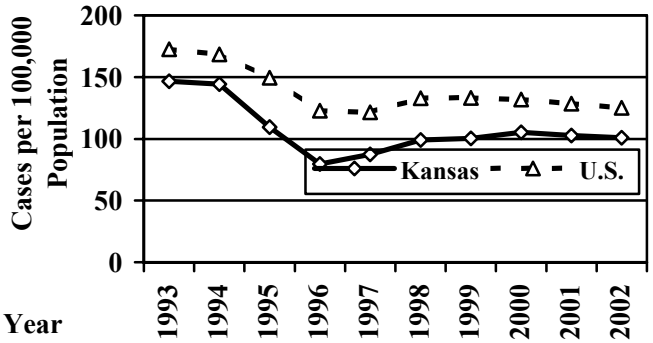
More detailed information on STDs in Kansas is available at:

www.kdhe.state.ks.us/hiv-std.

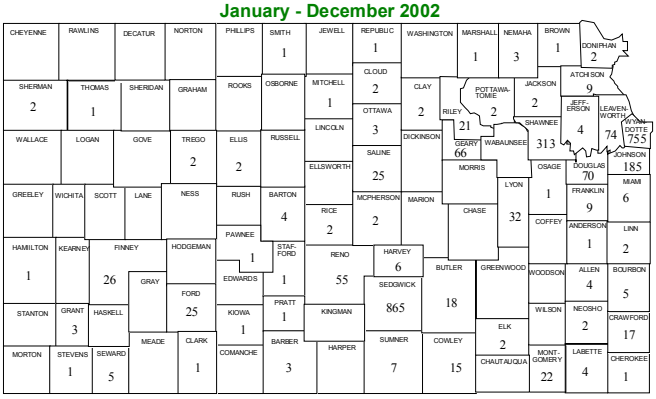
Epidemiology and Trends

2002 Case Total	2701
Kansas Rate	101 per 100,000
U.S. Rate (2001)	129 per 100,000
Rate by gender	
Female	113 per 100,000
Male	89 per 100,000
Rate by race	
White	32 per 100,000
Black	985 per 100,000
Asian/Pacific Islander	23 per 100,000
Native American	52 per 100,000
Hispanic*	83 per 100,000
Rate by geographic area	
Urban	164.6 per 100,000
Non-Urban	41.9 per 100,000

Gonorrhea Incidence Rate by Year
1993 - 2002

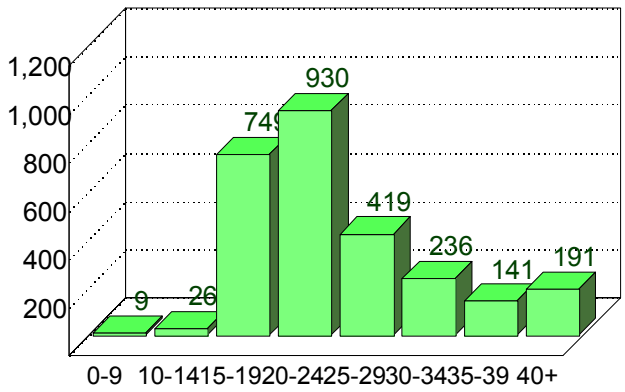


State of Kansas
Reported Cases of Gonorrhea by County
January - December 2002



Total 2701

State of Kansas
Reported Cases of Gonorrhea by Age
January - December 2002



Total 2701

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* The STD program at KDHE designates "Hispanic" as a race category and therefore analysis by Hispanic ethnicity is not presented.

Gonorrhea is the second most commonly reported sexually transmitted disease in Kansas. In 2002, 2,701 cases of gonorrhea were reported in Kansas. This number is two percent less than the 2,761 cases reported in 2001. The three-year median for 1998-2000 was 2,665 cases. The cases ranged from 0 to 80 years of age with a median age of 22 years. Females accounted for 57% of the reported cases. As with chlamydia, gonorrhea infections disproportionately affect females in their childbearing years. Sixty-two percent of all reported cases in 2002 occurred in the 15-24 age group. This may represent the result of targeted screening efforts.

African-Americans accounted for 56% of all reported gonorrhea infections, followed by Whites (27%), Hispanics (6%), and Native Americans, Asian/Pacific Islanders each with less than 1% of the total cases. Nine percent of the reports had no race indicated. This may be due to differences in screening sites and in reporting bias, as described in the introduction. However, even when looking at results within each screening site, the positivity rate of gonorrhea was higher among African-Americans and Hispanics than among Whites. Urban areas continued to report the majority of infections, with Wyandotte and Sedgwick Counties accounting for 61% of the total cases reported.

In 2002, a total of 34.018 tests were performed by Kansas Health and Environmental Laboratory, Sedgwick and Wyandotte County laboratories with an overall positivity rate of 2.4% (721/34,018). The remaining cases reported in 2002 originated from providers and other laboratories across Kansas.

HAEMOPHILUS INFLUENZAE, invasive disease

Haemophilus influenzae is a Gram-negative cocobacillus that causes invasive diseases[2] such as meningitis, septic arthritis, epiglottitis, cellulitis, bacteremia, and pneumonia. The organism, which resides in the upper respiratory tract of humans, has six serotypes (a through f) that may cause invasive disease. Symptoms may include fever, lethargy, vomiting, and a stiff neck and may appear after a 2 to 4 day incubation period. Before the introduction of *H. influenzae* type b (Hib) conjugate vaccination, most cases of invasive diseases among children were caused by type b. Antibiotic prophylaxis may be recommended when susceptible children are exposed to serotype b cases. The mode of transmission is presumably person-to-person, by direct contact, or through inhalation of droplets of respiratory tract secretions.

The first conjugate vaccine against Hib became available in 1987. Currently, several Hib conjugate vaccines are licensed by the U.S. Food and Drug Administration and recommended for children beginning at two months of age or as soon as possible thereafter. High levels of immunization among children have caused a dramatic decrease in the incidence of this decrease.

Laboratory Criteria for Surveillance Purposes

- Isolation of *H. influenzae* from a normally sterile site (e.g., blood, cerebrospinal fluid [CSF], joint, pleural, or pericardial fluid)[3].

Surveillance Case Definitions

- *Probable:* a clinically compatible case with detection of *H. influenzae* type b antigen in CSF[4].
- *Confirmed:* a clinically compatible case that is laboratory confirmed.

Epidemiology and Trends

2002 Case Total	5
Kansas rate	0.2 per 100,000
U.S. rate (2001)	0.5 per 100,000

In 2002, five invasive *Haemophilus influenzae* infections were reported in Kansas.

Conjugate vaccines became available in 1990 for use in infants as young as 6 weeks of age and there was an immediate and sustained decrease in the number of reported Hib cases among

[2] Invasive means bacteria isolated from a normally sterile site, such as blood, bone, joint, pericardial fluid, peritoneal fluid, or spinal fluid.
[3] Positive antigen test results from urine or serum samples are unreliable for diagnosis of *H. influenzae* disease.
[4] All suspected, probable, and confirmed cases of *H. influenzae* type b are reportable.

children in Kansas and in the U.S. Before introduction of the vaccine, an average of 31-72 cases were seen annually in Kansas. Currently, 0-8 cases are reported annually and most are in adults.

The national immunization goal for the year 2010 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Estimated Kansas immunization coverage rate of the National Immunization Survey for the third dose of the *Haemophilus influenzae* type b vaccine (Hib3) was 90.5% (± 4.5%) in 2000.

HANTAVIRUS PULMONARY SYNDROME

Hantavirus Pulmonary Syndrome (HPS), commonly referred to as Hantavirus Disease, is a severe cardiopulmonary illness resulting in death in approximately 45% of the cases. Since being recognized in 1993 in the "4 Corners" area of the Southwest shared by New Mexico, Arizona, Colorado, and Utah, it has been identified in over half of the states in the U.S. In the U.S., the agent most often implicated is Sin Nombre virus, which is transmitted to humans from its primary rodent reservoir the deer mouse (*Peromyscus maniculatus*). Transmission occurs through inhalation of aerosolized virus particles from mouse urine and feces or by direct handling of infected rodents, rodent droppings, or nests and subsequent accidental inoculation of the eyes, nose, or mouth. There is no evidence of person-to-person transmission. The incubation period is one to six weeks, usually 2-3 weeks. Early symptoms include fatigue, fever, and myalgia, especially in the large muscle groups – thighs, hips, back, and sometimes shoulders. Headaches, dizziness, chills, and gastrointestinal symptoms may also be present. Four to ten days after the initial prodrome, the late symptoms of coughing and shortness of breath appear as the lungs fill with fluid. The febrile illness is thus characterized by pulmonary infiltrates and respiratory compromise, clinically resembling acute respiratory disease syndrome (ARDS). Laboratory findings include hemoconcentration, left shift in the white blood cell count, neutrophilic leukocytosis, severe thrombocytopenia, and circulating immunoblasts.

Clinical Case Definition

An illness characterized by one or more of the following clinical features:

- A febrile illness (i.e., temperature >101.0 °F [>38.3 °C]) characterized by bilateral diffuse interstitial edema that may radiographically resemble ARDS, with respiratory compromise requiring supplemental oxygen, developing within 72 hours of hospitalization, and occurring in a previously healthy person.
- An unexplained respiratory illness resulting in death, with an autopsy examination demonstrating noncardiogenic pulmonary edema without an identifiable cause.

Laboratory Criteria for Surveillance Purposes

- Detection of hantavirus-specific immunoglobulin M or rising titers of hantavirus-specific immunoglobulin G, **or**
- Detection of hantavirus-specific ribonucleic acid sequence by polymerase chain reaction in clinical specimens, **or**
- Detection of Hantavirus antigen by immunohistochemistry.

Surveillance Case Definitions

- ***Confirmed***: a clinically compatible case that is laboratory confirmed.

Epidemiology and Trends

2002 Case Total	*1*
K.S. rate	< 0.1 per 100,000
U.S. rate (2001)	< 0.1 per 100,000

In 2002, there was one hantavirus case identified in Kansas. The case was hospitalized but no death was reported. The three-median for 1999-2001 was 1 case. Since the virus was first discovered in 1993, there have been 0-4 cases reported annually. Between 1993-2001, 14 cases of Hantavirus were reported in Kansas, with five (36%) cases resulting in death.

HEPATITIS A

Hepatitis A is caused by an RNA picornavirus that affects the liver. Onset is usually abrupt with fever, malaise, anorexia, nausea, vomiting, and abdominal discomfort, followed within a few days by jaundice. Symptoms appear, on average, one month after exposure (range 15 to 50 days). Illness lasts 1-2 weeks to several months (rare) and the length of illness depends on the clinical severity. The disease is most common among children and young adults. Severity of illness is highly variable and can be mild or asymptomatic in young children. Transmission is from person to person by the fecal-oral route. Peak levels of the agent appear in the feces a week or two before symptom onset and diminish rapidly after symptoms appear. In recent years, community-wide cases have accounted for most disease transmission, although common-source outbreaks due to food contaminated by food handlers, contaminated produce, or contaminated water continue to occur. Immunity after infection probably lasts for life.

Gamma globulin (IG) can help prevent hepatitis A if administered soon after infection, and is recommended for people who live in the same house as a person with hepatitis A, for sexual contacts of a person with hepatitis A, and for children in the same day care center with a child with hepatitis A. IG is **NOT** given to casual contacts of a person with hepatitis A because the risk of infection in these situations is extremely small. An inactivated hepatitis A vaccine is very effective in preventing infection and is recommended for travelers to countries where hepatitis A is a common infection, and for high-risk adults and children in this country. The vaccine has been shown to be safe and efficacious. Protection against clinical hepatitis A may begin in some persons as soon as 14 days after a single dose of vaccine and nearly all have protective antibody by 30 days.

Clinical Criteria

- An acute illness with (a) discrete onset of symptoms and (b) jaundice or elevated serum aminotranferase levels.

Laboratory Criteria for Surveillance Purposes

- Immunoglobulin M (IgM) antibody to hepatitis A virus (anti-HAV) positive.

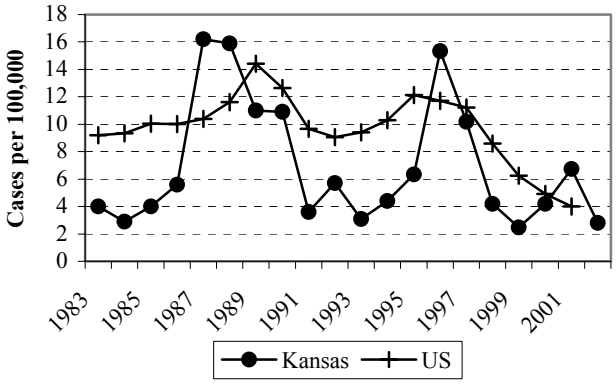
Surveillance Case Definitions

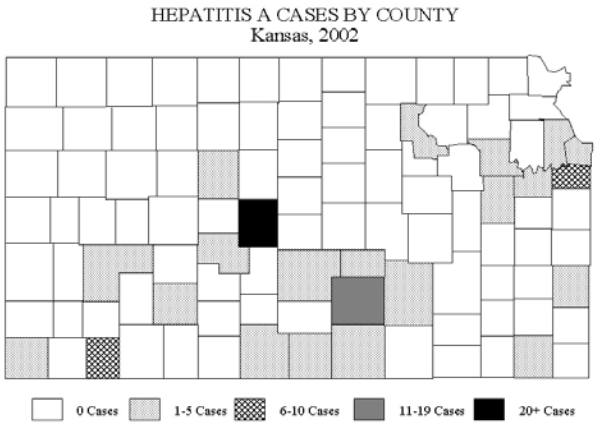
- *Confirmed:*
  - a case that meets the clinical case definition and is laboratory confirmed ***or***
  - a case that meets the clinical case definition and occurs in a person who has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (e.g., household or sexual contact with an infected person during the 15-50 days before the onset of symptoms).

Epidemiology and Trends

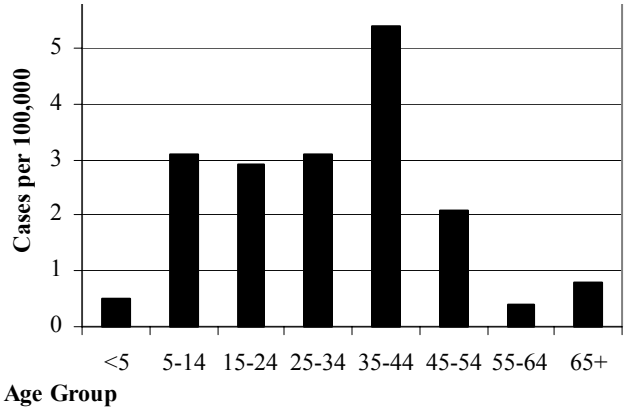
2002 Case Total	70
Kansas Rate	2.8 per 100,000
U.S. Rate (2001)	4.0 per 100,000
Rate by gender	
Female	2.0 per 100,000
Male	3.0 per 100,000
Rate by race	
White	2.6 per 100,000
Black	1.2 per 100,000
Rate by ethnicity	
Hispanic	8.7 per 100,000
Non-Hispanic	1.8 per 100,000
Rate by geographic area	
Urban	1.6 per 100,000
Non-Urban	3.5 per 100,000

Hepatitis A Incidence Rate by Year
Kansas, 1983-2002





Hepatitis A Incidence Rate by Age Group
Kansas, 2002



The incidence of hepatitis A decreased by 61% in 2002 from the previous year (181 cases). Three separate localized outbreaks accounted for 34 of the cases. One outbreak was community-based illegal drug use, one was among school-aged children in the same classroom and the other was among a family. The three-year median for 1999-2001 was 111 cases. The 2001 cases ranged in age from 4 year to 84 years of age; the median age was 33 years. The highest incidence occurred in the 35-44 year age group, with a rate of 5.4 per 100,000. Ninety percent of the cases occurred in Whites, 2.9% in African-Americans, and in 7.1% of cases race was no reported. No cases were reported for Asian/Pacific Islander or for Native American. Of the 70 cases, 25.7% were Hispanics, 64.3% were non-Hispanics, and ethnicity was not reported in 10% of cases.

Risk factors during the 2-6 weeks prior to illness were collected on 64 of the cases. Reported risk factors identified included: use of street drugs (36%), travel to foreign countries (25%), and eating raw shellfish (1.6%). Individuals may have had more than one risk factor.

HEPATITIS B

Hepatitis B (HBV) is a virus that affects the liver. About half of the people who are infected will have symptoms, although in many cases symptoms may be mild and not be attributed to HBV infection. The usual signs and symptoms of acute HBV infection include fever, fatigue, dark urine, muscle or joint pain, loss of appetite, nausea, vomiting, and jaundice (yellow skin and sclera). Only a small portion of infections are clinically recognized; less than 10% of children and 30-50% of adults with acute infection will have jaundice as a symptom. After infection, about 90% of people recover, develop antibodies to the virus, and cannot spread the disease to others. Five to 10 percent cannot clear the virus from their systems and become chronic carriers. Chronic carriers will usually have ongoing inflammation of the liver, continue to be infectious to others, and have an increased risk of developing severe liver disease such as cirrhosis or liver cancer. Transmission occurs via percutaneous or permucosal exposure, i.e. (1) infective blood or body fluids introduced at birth, (2) through sexual contact, or (3) by contaminated needles. Blood (and serum-derived fluids), saliva, semen, and vaginal fluids have been shown to be infectious. The incubation period is usually 45-180 days, average 60-90 days. All persons who are hepatitis B surface antigen (HBsAg) positive are potentially infectious.

Hepatitis B can be prevented by vaccination. Hepatitis B vaccine is recommended for all children at birth, 1-2 and 6-18 months of age or, if not previously received, at 11-12 years of age. Hepatitis B vaccine is also recommended for persons in the following high risk groups: persons with occupational risk, clients and staff of institutions for the developmentally disabled; hemodialysis patients; recipients of certain blood products; household and sexual partners of HBsAg carriers; international travelers visiting high prevalence areas; injecting drug users; sexually active persons with multiple partners; and inmates of long-term facilities.

ACUTE HEPATITIS B

Clinical Criteria

- An acute illness with discrete onset of symptoms ***AND***
- Jaundice or elevated serum aminotranferase levels.

Laboratory Criteria for Surveillance Purposes

- Immunoglobulin (IgM) antibody to hepatitis B core antigen (anti-HBc) positive hepatitis B surface antigen (HBsAg) positive ***AND***
- IgM anti-HAV negative.

Surveillance Case Definitions

- *Confirmed:* a case that meets the clinical case definition and is laboratory confirmed.

Comment

- All cases of viral hepatitis (acute and chronic) became reportable conditions in Kansas in 2000.

Epidemiology and Trends

2002 Case Total	24
Kansas Rate	0.9 per 100,000
U.S. Rate (2001)	2.8 per 100,000

There were 24 confirmed acute hepatitis B cases reported in 2002, a 71% increase as compared to the 14 cases in 2001; the three-year median for 1998-2000 was 27 cases. The 2002 cases ranged in age from 23 to 55 years of age. The median age was 40 years. The highest incidence (2.2 per 100,000) occurred in the 35-44 year age group. Fifty-eight percent of the cases were reported from urban areas. Risk factors identified for 23 cases from 2 weeks to 6 months prior to the onset of illness included: having more than one sexual partners (13%), injection drug use (17%). Individuals may have had more than one risk factors.

The national immunization goal for the year 2010 is to achieve a 90% coverage rate among two-year-old children for the complete series of hepatitis B vaccination. Estimated Kansas immunization coverage rate of the National Immunization Survey for the third dose of the hepatitis B vaccine for two year olds was 88.8% ($\pm$ 4.9%) in 2001.

CHRONIC HEPATITIS B

Clinical Criteria

- A chronic illness with or without a history of symptoms of hepatic inflammation.

Laboratory Criteria for Surveillance Purposes

- Hepatitis B surface antigen (HbsAg) positive.

Surveillance Case Definitions

- *Confirmed:* a case which is HBsAg positive, but which fails to meet the case definition for acute hepatitis B for any other reason[*].

Comment

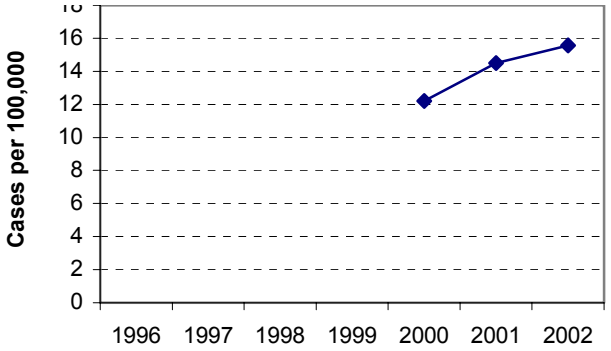
- Chronic hepatitis B is not a nationally notifiable disease and there is no national standardized surveillance case definition.

[*] This definition applies for surveillance and reporting purposes in Kansas only.

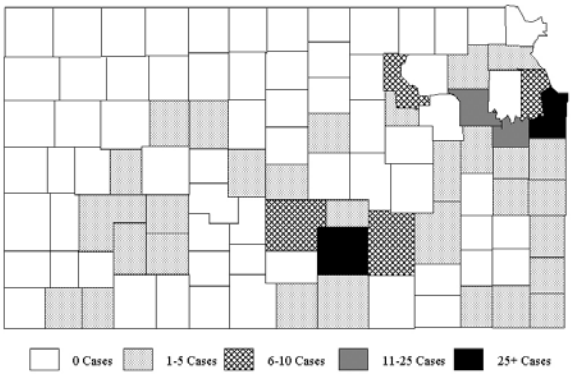
Epidemiology and Trends

2002 Case Total	423
Kansas Rate	15.6 per 100,000
U.S. Rate (2001)	N/A
Rate by gender	
Female	14.8 per 100,000
Male	16.1 per 100,000
Rate by race	
White	4.2 per 100,000
Black	24.9 per 100,000
Asian/Pacific Islander	296.9 per 100,000
Native American	9.8 per 100,000
Rate by ethnicity	
Hispanic	4.8 per 100,000
Non-Hispanic	9.7 per 100,000
Rate by geographic area	
Urban	24.2 per 100,000
Non-Urban	6.8 per 100,000

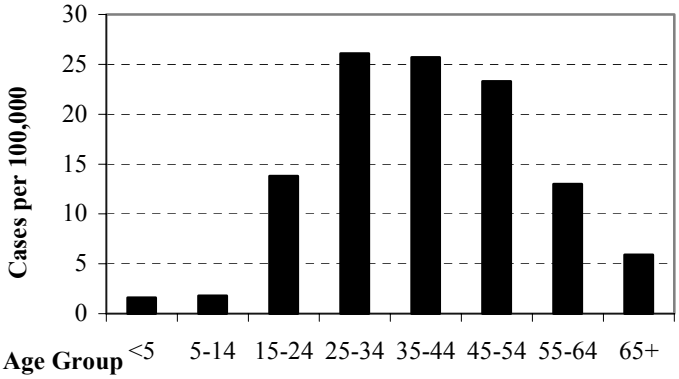
Chronic Hepatitis B Prevalence Rate by Yea
Kansas, 2000-2002



CHRONIC HEPATITIS B CASES BY COUNTY
Kansas, 2002



Chronic Hepatitis B Rate by Age Group



In 2002, there were 423 chronic hepatitis B prevalent cases reported, a 7.8% increase as compared to the 390 cases in 2001. The prevalent cases are chronic carriers who are HBsAg-positive. The cases ranged from 1 to 84 years of age (median = 38). Twenty-four percent of the cases occurred in Whites, 42% in Asian/Pacific Islanders, 10% in African-Americans, >1% in Native Americans and in 22% of the cases race was not reported. Hispanic ethnicity accounted for 2% of the cases, although ethnicity was not reported in 40% of cases. There was a significantly higher proportion of Asian/Pacific Islanders in the population with chronic hepatitis B than in the Kansas population. The largest number of Hepatitis B chronic cases occurred in the 25-34 (143 cases, 26.1/100,000) and 35-44 (104 cases, 25.7/100,000) year age groups. The ratio of urban (331) to non-urban (32) was 3.6 to 1.

HEPATITIS C

Hepatitis C is a liver disease caused by a flavivirus. It is an illness with insidious onset of symptoms that may include anorexia, abdominal discomfort, nausea, and vomiting. Jaundice is seen less frequently than hepatitis B (up to 75% of hepatitis C infected individuals do not have jaundice). Chronic infection is common (85% of cases) and can be symptomatic or asymptomatic. Prior to blood donor screening for this infection, hepatitis C occurred most often in people who had received blood transfusions. More recently, hemodyalisis patients and persons who have shared needles (e.g., injective drug users) have been most affected. The incubation period ranges from 2 weeks to 6 months, most commonly 6-9 weeks. It is spread primarily by exchange of contaminated blood with an infected person, such as through a blood transfusion or sharing needles. The risk of sexual transmission has not been thoroughly studied but appears to be less than 5%, similar to perinatal infection.

Up to 20% of acute hepatitis cases have no detectable antibody to hepatitis C virus (anti-HCV) when detected and reported and are classified as non-A, non-B hepatitis. Some (5%-10%) have not yet seroconverted to hepatitis C and others (5-10%) remain negative even after prolonged follow-up. Up to 90% of acute hepatitis C cases become chronic carriers who are able to continue to transmit the disease.

ACUTE HEPATITIS C

Clinical Criteria

- An acute illness with (a) discrete onset of symptoms and (b) jaundice or elevated serum aminotranferase levels

Laboratory Criteria for Surveillance Purposes

- Serum aminotranferase levels > 7 times the upper limit of normal, ***and***
- Immunoglobulin M (IgM) anti-HAV negative ***and***
- IgM anti-HBc negative, ***and***

    - **For Hepatitis C:**
        - Antibody to hepatitis C virus (anti-HCV) positive, **verified by a supplemental test**[*]:

    - **For Non-A, Non-B Hepatitis:**
        - Anti-HCV negative (if done).

Surveillance Case Definitions

- *Confirmed:* a case that meets the clinical case definition and is laboratory confirmed.

Comment

- All cases of acute viral hepatitis became reportable conditions in Kansas in 2000.

Epidemiology and Trends

2002 Case Total	5
Kansas Rate	0.18 per 100,000
U.S. Rate (2001)	1.2 per 100,000

In 2002, there are 5 confirmed acute hepatitis C cases reported. The four-year median for 1999 to 2002 is 5.5 cases. The cases ranged from 35 to 49 years of age. The median age was 38 years. 40% of the cases are white, 40% are of unknown race and 20% are American Indian or Alaska Native.

[*] Supplemental tests include RIBA (Recombinant ImmunoBlot Assay), RT-PCR (Reverse Transcriptase Polymerase Chain Reaction), or viral load tests.

CHRONIC HEPATITIS C

Clinical Criteria

- A chronic illness with or without a history of symptoms of hepatic inflammation. Although initial infection may be asymptomatic or mild (>90% of cases), chronic infection is common (>85% of cases). Of those chronically infected, about half will develop cirrhosis or hepatocellular carcinoma. Liver function tests may be elevated or normal during chronic disease.

Laboratory Criteria for Surveillance Purposes

- Anti-HCV positive (repeat reactive) by EIA, verified by an additional more specific assay (e.g. RIBA for anti-HCV or nucleic acid testing for HCV RNA), OR
- HCV RIBA positive, OR
- HCV RIBA positive, OR
- Nucleic acid test for HCV RNA positive, OR
- Anti-HCV positive (repeat reactive) by EIA with a signal to cut-off ratio >= 3.8 (as this becomes available).

Surveillance Case Definition

- *Confirmed:* a case which is anti-HCV positive (if done) and with a positive supplemental test (PCR or RIBA), **but** which fails to meet the case definition for acute HCV.

Comment

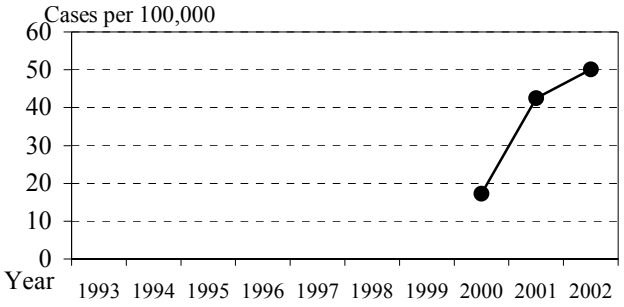
- In 2002 chronic hepatitis C was not a nationally notifiable disease and the ***Surveillance Case Definition*** was applicable for surveillance and reporting purposes in Kansas.

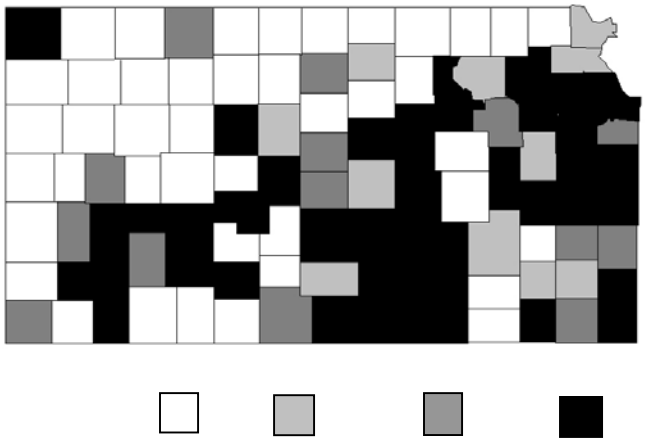
- The HCV screening antibody EIA (enzyme immunoassay) test alone is **NOT** sufficient to diagnose a person with hepatitis C unless specific signal to cut off optical densities are measured. In low prevalence populations, this test may be false positive half the time (hence the need for the confirmatory testing). About 15% of patients with confirmed positive for Hepatitis C antibodies spontaneously cleared their virus. This means that about 85% of patients infected with Hepatitis C virus may become chronic carriers.

Epidemiology and Trends

2002 Case Total	1,360
Kansas rate	50.1 per 100,000
U.S. rate (2000)	**N/A**
Rate by gender	
Female	26.0 per 100,000
Male	24.0 per 100,000
Rate by race	
White	28.8 per 100,000
African-American	60.2 per 100,000
Asian/Pacific Islander	46.4 per 100,000
Native American	52.1 per 100,000
Rate by ethnicity	
Hispanic	22.7 per 100,000
Non-Hispanic	21.0 per 100,000
Rate by geographic area	
Urban	65.4 per 100,000
Non-urban	34.5 per 100,000

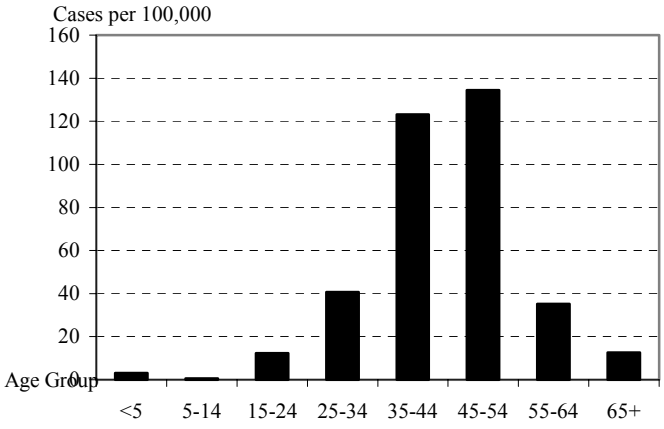
Chronic hepatitis C prevalence rate by year Kansas, 1993-2002





In 2002, there were 1,360 chronic hepatitis C prevalent cases reported; a 16% increase as compared to the 1,143 cases in 2001. This increase may be due to more awareness and improvement in reporting of cases. The cases ranged from less than 0 to 90 years of age (median = 44). The ratio of female (707) to male (653) was 1.1:1. 52.0 percent of the cases occurred in Whites, 8% in African-Americans, 2% in Asian/Pacific Islanders, 1% in Native American and in 37% of the cases race was not reported. Of the 855 cases where ethnicity was noted, 3% were Hispanic. The largest number of hepatitis C chronic cases occurred in the 35-44 (498 cases, 123/100,000) and 45-54 (508 cases, 135/100,000) year age groups**.** The ratio of non-urban (464) to urban (896) was 1:1.9.

Chronic Hepatitis C cases by Age Group



INFLUENZA

Influenza, more commonly called "flu", is a highly contagious viral infection of the nose, throat, bronchial tubes and lungs. There are two main types of the virus – type A and B – and many different strains fall under each type. Influenza occurs most often during winter months, causing symptoms of headache, fever, chills, dry cough, fatigue, and body aches. Intestinal symptoms are uncommon and are not included in the definition of a clinical case. The incubation period is short – usually ranging from one to three days. Most people are ill for only a few days; however, more serious illness, such as pneumonia, may develop. Such serious complications of influenza are typically found in the elderly (those 65 years and older) or in those with chronic illnesses that weaken the immune system, such as cancer, lung disease, heart disease, and diabetes. Complications of influenza result in approximately 114,000 hospitalizations and 36,000 deaths every year in the United States. Infected individuals transmit influenza through coughing and sneezing; contact with the droplets produced during these actions may result in illness.

A vaccine is available to reduce the likelihood of influenza infection and lessen the severity of the disease. Exposure to one strain of the virus does not confer immunity to other strains; additionally, different strains may circulate in different years. As a result, the vaccine may change yearly to include the upcoming season's most prevalent viral strains. Annual influenza vaccination is necessary, as immunity declines rapidly over time. Vaccination should occur before influenza is seen in the community – in the United States, this is typically from November through March. Accordingly, vaccination campaigns should begin in October.

The 2002-2003 trivalent influenza vaccine contained the following strains: A/Moscow/10/99 (H3N2)-like, A/New Caledonia/20/99 (H1N1)-like, and B/Hong Kong/330/2001-like.

Clinical Criteria

- Fever ($100°F [37.8°C], oral or equivalent) AND cough or sore throat.

Laboratory Criteria For Surveillance Purposes

- Isolation of influenza virus from a throat specimen.

Surveillance Case Definitions

- Confirmed: a case that meets the clinical case definition and is laboratory confirmed.

Comment

During the 2002-2003 influenza season, sentinel physician-based active influenza surveillance was conducted in cooperation with the CDC. The surveillance period began September 29, 2002 (CDC week 40) and ended May 17, 2003 (CDC week 20). Twenty-one health care providers spread across 15 Kansas counties volunteered to serve as sentinel sites, including nine family

practice clinics, four collegiate student health centers, four pediatric clinics, three nursing homes, and one military institution. Sentinel sites determined the number and age of patients seen with influenza-like illness (ILI) for the preceding week. ILI was defined as a fever $100°F (oral or equivalent) in addition to cough and/or sore throat (in the absence of a known cause). The total number of patients seen at each site for any reason was also recorded. Many participating health care providers reported these figures directly to CDC via telephone or internet – others reported their numbers to KDHE's surveillance coordinator, who in turn informed CDC.

Physicians throughout the state were asked to collect pharyngeal swabs from patients presenting with ILI for submission to the Department of Health and Environmental Laboratory (DHEL). DHEL conducted viral isolation; positive influenza specimens were typed and sub-typed. Aggregate information from DHEL was sent weekly to the CDC.

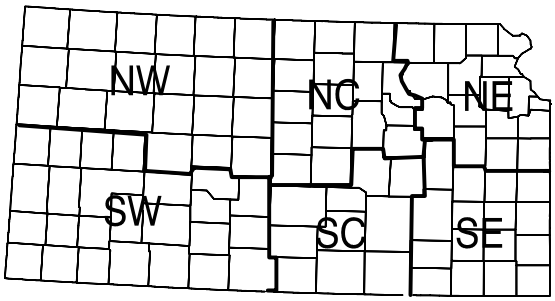
Epidemiology And Trends

A total of 102,272 patients were seen at sentinel sites during the 2002-2003 influenza season; 0.8% of this total met the case definition for influenza-like illness. ILI activity peaked during the week ending December 28, 2002 (CDC week 52), earlier than the national peak at the week ending February 22 (CDC week 8). Like the rest of the country, the Kansas influenza season was mild with influenza B virus active from October through January. After the week ending February 6 (CDC week 6), influenza A virus was reported more frequently than influenza B virus.

DHEL tested 119 specimens during the 2002-2003 influenza season – 29 (24%) were positive. Twelve (41%) of the positive specimens were influenza A viruses (11 were subtype H1N1 and one was subtype H3N2). Seventeen (59%) were influenza B viruses (subtype influenza B/Hong Kong). All positive influenza specimens were antigenically similar to strains included in the 2002-2003 vaccine.

The highest percentage of deaths due to pneumonia/influenza was recorded in February, while the greatest number of deaths attributed to pneumonia/influenza was noted in January. As seen in previous years, nearly 90 percent (1434/1611) of pneumonia/influenza deaths during influenza season were among individuals aged 65 and over.

Geographic regions in Kansas



Geographic Area (Specimens analyzed)	Positive A N (%)	*Positive B* N (%)
NE (62)	3 (3%)	3 (3%)
NC (20)	0 (0%)	2 (2%)
NW (4)	0 (0%)	0 (0%)
SE (0)	0 (0%)	0 (0%)
SC (32)	9 (8%)	12 (10%)
SW (1)	0 (0%)	0 (0%)
Total (119)	12 (10%)	17 (14%)

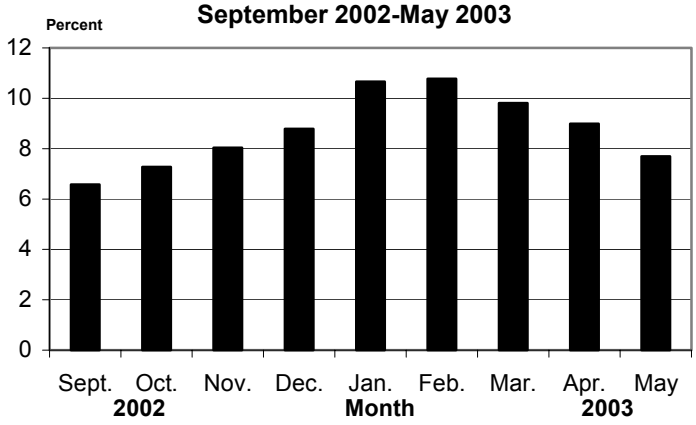
Test results* for influenza

Analyzed for influenza	119
Influenza A (+)	12
H1N1	11
H3N2	1
Influenza B (+)	17
Hong Kong	17
Influenza (-)	90
Other Viruses	7
Adenovirus	3
Parainfluenza	2
RSV	2

*Only results from specimens submitted to the DHEL are presented.

Age Group	Pos A N (%)	Pos B N (%)	Total N (%)
0-4	4 (14%)	5 (17%)	9 (31%)
5-24	4 (14%)	10 (34%)	14 (48%)
25-64	1 (3%)	3 (10%)	4 (14%)
65+	2 (7%)	0 (0%)	2 (7%)
Total	11 (38%)	18 (61%)	29 (100%)

Percent of Total Recorded Kansas Deaths with Influenza and/or Pneumonia Reported as an Underlying Cause
September 2002-May 2003



PEDIATRIC LEAD POISONING

Although not an infectious disease, lead poisoning is one of the most common and preventable pediatric health problems affecting Kansas' children. In young children, lead levels above 10 µg/dL can affect the developing nervous system, resulting in delayed development, decreased IQ, and learning and behavior problems. Higher lead levels (greater than 20 µg/dL) can have adverse effects on the kidneys and blood-producing organs as well as the digestive and reproductive systems. Very high blood lead levels (greater than 70 µg/dL) can cause devastating health consequences, including seizures, coma, and death. The developing fetus is very susceptible to the lead exposure and blood lead levels of the mother. Children under six years most often become lead-poisoned by ingesting lead contaminated dust through the frequent hand-to-mouth activity typical of this age group such as thumb-sucking, or chewing on toys, pacifiers and other objects that have been in contact with dust and soil. Lead-based paint in homes built before 1978 is the most common source of lead exposure for children when painted surfaces are peeling, deteriorating, or disturbed during renovation or remodeling. Other potential sources of lead poisoning include water from leaded pipes, occupational or hobby exposure of the parent, soil contaminated from previous industry and leaded gas emissions, and food contaminated by imported dishes or cans containing lead. Children are considered to be at high risk for lead poisoning if they:

- Live in or regularly visit a house that was built before 1950.
- Live in or regularly visit a house built before 1978 with recent or ongoing renovations or remodeling (within the last six months).
- Have a sibling or playmate who has or did have lead poisoning.
- Live with an adult with occupational or recreational exposure to lead

The common warning signs of lead poisoning such as headache, stomachache, fatigue, loss of appetite or sleep disturbance, can easily be mistaken for common childhood problems. Most children have no symptoms of lead poisoning until the blood lead levels are very high. A blood lead test is the only way to tell if a child has an elevated blood level and is recommended as part of standard pediatric check-ups. Blood lead testing is mandated as part of the Kansas Be Healthy health assessment for children under six receiving Medicaid benefits.

Based on 1998 CDC guidelines, Kansas has a universal screening recommendation: Using a blood lead test, screen all children at 12 and 24 months of age, screen all children from 36-72 months of age who have not been screened previously, and screen all children participating in a Medicaid EPDST physical. High-risk children should have a first blood lead test at six months of age. In December 2002 legislated mandatory reporting of all blood lead test results was implemented. A screening approach to target high-risk counties and communities will be developed with beginning implementation in late 2003.

Intervention activities should be triggered by blood lead levels 10 µg/dL. Children with blood lead levels 15 g/dL should receive individual case management, including nutritional and

educational interventions and more frequent screening. Medical evaluation and environmental investigation and remediation should be done for all children with blood levels 20 µg/dL.

Laboratory Criteria for Surveillance Purposes

- Venous blood lead level 10 µg/dL, ***or***
- Capillary blood lead results 10 µg/dL confirmed by retesting with venous blood, ***or***
- Two capillary blood lead results 10 µg/dL within 12 weeks of each other.

Surveillance Case Definitions

- *Confirmed:* a case that is laboratory confirmed.

Comment: More detailed information on lead in Kansas is available at: www.kdhe.state.ks.us/lead.

Epidemiology and Trends – children <72 months

2002 Case Total	278
Kansas rate (age-specific)	124 per 100,000
U.S. rate (2000)	N/A
Rate by gender	
Female	114.9 per 100,000
Male	127.2 per 100,000
Rate by geographic area	
Urban	128.7 per 100,000
Non-Urban	118.55 per 100,000

The number of children screened in 2001 was 10,529 compared to 15,531 in 2002. In 2002, the number of **confirmed** pediatric lead poisoning cases reported in children < 6years old was 278 cases, an increase of 16 cases from 2001. One factor in the increase of identified cases may be due to the screening of a greater proportion of high-risk children.

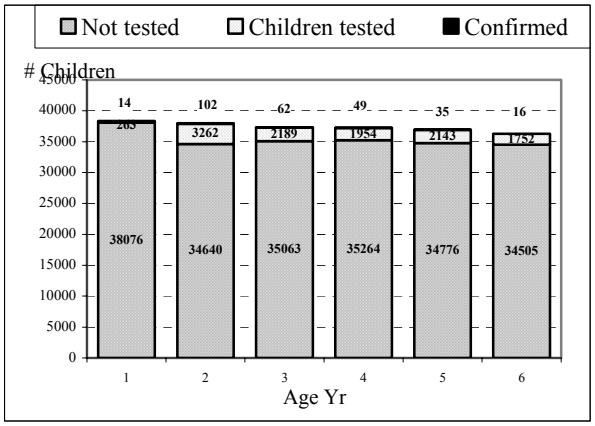
In 2002 DHEL performed 2,207 tests of which 53 were confirmed, resulting in a positive rate of 2%. Since only positive results are available from private laboratories for 11 months of 2002, it is not possible to assess positivity rates from private laboratories.

The age range of confirmed cases was from 6 to 70 months. The median age was 27 with

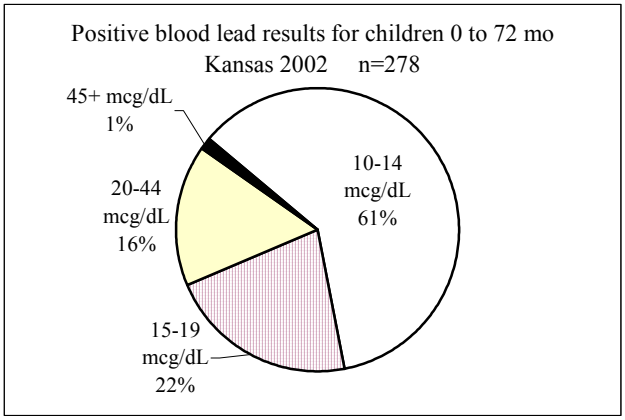
an average age of 31 months. The 12-23 month age group accounted for 37% of the reported cases and the 24-47 month age group represented 40% of the pediatric lead poisoning cases. The ratio of male to female was about one to one. Distribution of cases by race/ethnicity was not available. There were 30% more cases residing in urban counties relative to non-urban counties (**Note:** Urban residence is represented by 4 counties, one urban county did not report any elevated BLL). There were 49 cases (17.6%) with a blood lead level ≥20 µg/dL, a level that might warrant an environmental risk assessment.

Differences in the number of cases by geographic area may be attributable to variations in screening practices.

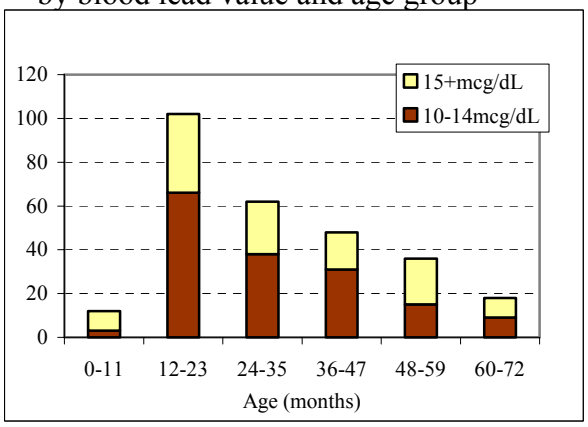
1. Number of children tested by age group and case confirmation



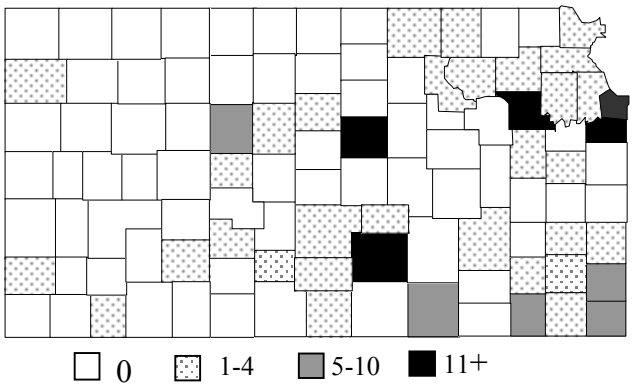
2. distribution of elevated blood lead levels by age group of children 0-72 months of age



3. Number of cases of lead poisoning by blood lead value and age group



4. **Number** of lead cases by county.



LEGIONELLOSIS

The gram-negative bacilli, *Legionella*, cause Legionellosis. This acute bacterial disease is associated with two clinically and epidemiologically distinct illnesses: Legionnaires' disease, which is characterized by fever, myalgia, cough, and pneumonia and Pontiac fever, a milder form of the illness without pneumonia. The incubation period is 2-10 days, most often 5-6 days for Legionnaire's disease; 24-48 hours for Pontiac fever. Legionnaires' disease was first characterized in an outbreak that occurred in Philadelphia in 1976, among people attending a state convention of the American Legion. Subsequently, the bacterium causing the illness was named *Legionella pneumophila*. *Legionella spp.* are widely distributed in the environment They have been found in creeks and ponds, hot and cold water taps, hot water tanks, water in air conditioning cooling towers and evaporative condensers, and soil at excavation sites. The disease appears to be spread through inhalation of contaminated aerosols from a soil or water source; other modes are possible, but none have been proven conclusively. Most cases of Legionnaires' disease are sporadic with 23% of cases nosocomial and only 10-20% are linked to outbreaks. Pontiac fever has been recognized only during outbreaks. All studies to date have shown that person-to-person spread does not occur and that underlying illness often plays a role. Legionellosis most frequently occurs in the elderly, especially in patients who smoke and in those with diabetes mellitus, chronic lung disease, renal disease or malignancy; and in the immunocompromised, particularly those who are receiving corticosteroids or who have had an organ transplant.

Laboratory Criteria for Surveillance Purposes

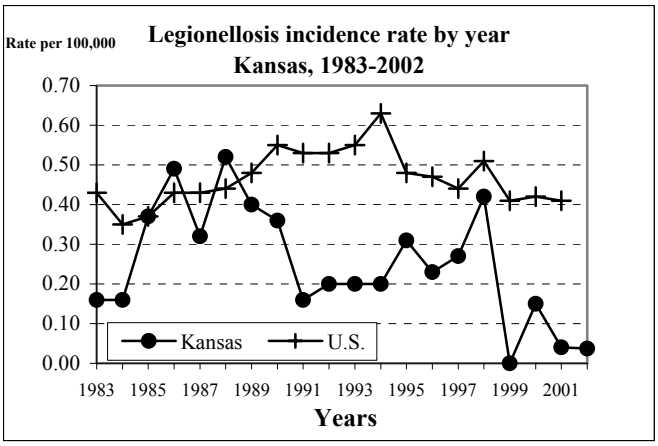
- Isolation of *Legionella* from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluids, ***or***
- Demonstration of a fourfold or greater rise in the reciprocal immunofluorescence antibody (IFA) titer to $128 against *Legionella pneumophila* serogroup 1 between paired acute- and convalescent-phase serum specimens, ***or***
- Detection of *L. pneumophila* serogroup 1 in respiratory secretions, lung tissue, or pleural fluid by direct fluorescent antibody testing, ***or***
- Demonstration of *L. pneumophila* serogroup 1 antigens in urine by radioimmunoassay or enzyme-linked immunosorbent assays.

Surveillance Case Definitions

- *Confirmed:* a clinically compatible case that is laboratory confirmed.

Epidemiology and Trends

2002 Case Total	1
U.S. rate (2000)	0.4 per 100,000



In 2001, there was one case of Legionellosis reported. The case presented with pneumonia requiring hospitalization but did not result in death. No contributing risk factors were identified. The three-median for 1999-2001 was 1 case. Since 1992, there have been 0-11 cases reported annually.

LISTERIOSIS

The bacterium *Listeria monocytogenes* causes Listeriosis, a rare but serious foodborne disease that primarily affects pregnant women, newborns and adults with weakened immune systems. It results in only about 2,500 cases of the estimated 76-million foodborne illnesses per year in the U.S. but produces 27% of the deaths from foodborne pathogens. The case-fatality rate for the disease is 15%. Listeriosis also produces the highest rate of hospitalization of any foodborne illness. FoodNet* sites in 1999 attributed 89% of their foodborne related hospitalizations to this infection. Clinical manifestations are host-dependent. In elderly and immunocompromised persons, sepsis and meningitis are the main presentations. Pregnant women, who are 20 times more likely than other healthy adults to get the disease and account for one-third of the cases, may experience a mild, flu-like illness followed by premature delivery, bacteremia and meningitis in their newborns or stillbirth. Outbreaks of acute febrile gastroenteritis have also occurred among immunocompetent persons. The organism has been found in a variety of raw foods, such as uncooked meats, unpasteurized milk, and raw vegetables, as well as in foods that become contaminated after processing, such as soft cheeses and cold cuts. It thrives in refrigeration temperatures (40EF). Persons at risk for serious infection can prevent Listeriosis by handling food properly and by avoiding certain high-risk foods.

*FoodNet is an acronym for the Foodborne Diseases Active Surveillance Network. The project consists of active surveillance for foodborne diseases and related epidemiologic studies designed to help public health officials better understand the epidemiology of foodborne diseases in the United States. It provides a network for responding to new and emerging foodborne diseases of national importance, monitoring the burden of foodborne diseases, and identifying the sources of specific foodborne diseases.

Laboratory Criteria for Surveillance Purposes

- Isolation of *Listeria monocytogenes* from a normally sterile site (e.g., blood or cerebrospinal fluid or, less commonly, joint, pleural, or pericardial fluid).

Surveillance Case Definitions

- *Confirmed:* a case that is laboratory confirmed.
- *Probable:* a clinically compatible case without laboratory confirmation

Note: Listeriosis became a nationally notifiable disease in 2000.

Epidemiology and Trends

2002 Case Total	**1**
U.S. rate (2001)	0.2 per 100,000

In 2002, one listeriosis case was reported. The case presented with meningitis and required hospitalization. No source was identified. In Kansas, listeriosis became reportable in the year 2000. In 2001, there were five unrelated cases of the infection reported, with three hospitalizations and no deaths.

In eight Northeastern states of the U.S., an outbreak occurred in 2002 that resulted in 46 illnesses, 7 deaths, and 3 stillbirths or miscarriages. This regional outbreak was traced to the consumption of contaminated turkey deli meat.

LYME DISEASE

Lyme disease is a bacterial infection caused by the spirochete, *Borrelia burgdorferi*. The first cluster of disease cases associated with this bacteria was discovered among children with arthritis near Lyme, Connecticut. Lyme disease may cause symptoms affecting skin, nervous system, heart and/or joints of an individual, but it is almost never fatal. A systemic, tickborne disease, it is often multistage. The best clinical marker for the disease is the initial skin lesion (i.e., erythema migrans [EM]) that occurs in 60%-80% of patients 3 to 32 days after tick exposure. However, the early stages of the illness may be asymptomatic, and the patient may present with later manifestations. The infection is transmitted by ticks, the most important being the deer tick (*Ixodes scapularis*) and the western black-legged tick (*Ixodes pacificus*).

A vaccine against lyme disease was available in 2001, but has since been withdrawn by the manufacturer.

Clinical Criteria

Erythema Migrans (EM)

EM is defined as a skin lesion that typically begins as a red macule or papule and expands over a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach $5 cm in size. Secondary lesions also may occur. Annular erythematous lesions occurring within several hours of a tick bite represent hypersensitivity reactions and are not EM. For most patients, the expanding EM lesion is accompanied by other acute symptoms, particularly fatigue, fever, headache, mildly stiff neck, arthralgia, or myalgia. These symptoms are typically intermittent. The diagnosis of EM must be made by a physician. Laboratory confirmation is recommended for persons with no known exposure.

Late manifestations

Musculosketal system

- Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints. Manifestations not considered as criteria for diagnosis include chronic progressive arthritis not preceded by brief attacks and chronic symmetrical polyarthritis. Additionally, arthralgia, myalgia, or fibromyalgia syndromes alone are not criteria for musculoskeletal involvement.

Nervous system

- Any of the following, alone or in combination: lymphocytic meningitis; cranial neuritis, particularly facial palsy (may be bilateral); radiculoneuropathy; or, rarely, encephalomyelitis. Encephalomyelitis must be confirmed by demonstration of antibody production against *B. burgdorferi* in the CSF, evidenced by a higher titer of antibody in CSF than in serum. Headache, fatigue, paresthesia, or mildly stiff neck alone are not criteria for neurologic involvement.

Cardiovascular system

- Acute onset of high-grade (2° or 3°) atrioventricular conduction defects that resolve in days to weeks and are sometimes associated with myocarditis. Palpitations, bardycardia, bundle branch block, or myocarditis alone are not criteria for cardiovascular involvement.

Laboratory Criteria for Surveillance Purposes

- Isolation of *Borrelia burgdorferi* from a clinical specimen ***or***
- Demonstration diagnostic immunoglobulin M or immunoglobulin G antibodies to *B burgdorferi* in serum or cerebrospinal fluid (CSF). A two-test approach using a sensitive enzyme immunoassay or immunofluorescence antibody followed by Western blot is recommended.

Surveillance Case Definition

- *Confirmed:* (a) a case with EM ***or***

(b) a case with at least one late manifestation that is laboratory confirmed.

Epidemiology and Trends

2002 Case Total	7
Kansas rate	0.3 per 100,000
U.S. rate (2001)	6.1 per 100,000
Connecticut rate (2001) (highest state rate in U.S.)	110.1 per 100,000

In 2002, there were 7 cases of Lyme disease reported. The majority of cases (71%) were in the 35-44 age group. Four (57%) of the cases were female and three (43%) male. Five (71%) of the seven cases were reported from urban areas.

MALARIA

Malaria is a parasitic infection caused by *Plasmodium vivax*, *P. ovale*, *P. malariae*, or *P. falciparum*.
Signs and symptoms are variable; however, most patients experience fever. In addition to fever, commonly associated symptoms include headache, back pain, chills, sweats, myalgia, nausea, vomiting, diarrhea, and cough. Untreated *P. falciparum* infection can lead to coma, renal failure, pulmonary edema, and death. The diagnosis of malaria should be considered for any person who has these symptoms and who has traveled to an area in which malaria is endemic. Asymptomatic parasitemia can occur among persons who have been long-term residents of areas in which malaria is endemic. The time between the infective bite and the appearance of clinical symptoms is 7-14 days for *P. falciparum*, 8-14 days for *P. vivax* and *P. ovale*, and 7-30 days for *P. malarieae*. With some strains of *P. vivax* and *P. ovale* from temperate areas, there may be a protracted incubation period of 8-10 months or longer. Malaria is spread through the bite of an infective female *Anopheles spp.* mosquito. Most species feed at dusk an during early night hours; some important vectors have biting peaks around midnight or the early hours of the morning.

Laboratory Criteria for Surveillance Purposes

Demonstration of malaria parasites in blood films.

Surveillance Case Definitions

- *Confirmed:* an episode of microscopically confirmed malaria parasitemia in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country. Therefore cases can be counted more than once in a lifetime.

Comment

- A subsequent attack experienced by the same person but caused by a different *Plasmodium spp.* is counted as an incident case. A subsequent attack experienced by the same person and caused by the same species in the United States may indicate a relapsing infection or treatment failure caused by drug resistance.

Epidemiology and Trends

2002 Case Total	13
Kansas rate	0.5 per 100,000
U.S. rate (2001)	0.6 per 100,000

In 2002, there were 13 cases of malaria reported. The cases ranged in age from 15 to 44 years. Five out of the 13 cases were foreign born, natives of Rwanda (1), Kenya (3), Ghana (1). Five had foreign travel history to countries were malaria is present. Cases had been in the following geographic areas: Africa (2), Korea (2), Brazil (1), India (1), Ecuador (1); individuals may have traveled to more than one country; The following species of malaria were identified in cases: P. falciparum (8), P. vivax (3), and undetermined (2).

MENINGITIS, OTHER BACTERIAL (non-meningococcal and non-*Haemophilus influenzae type B)*

Bacterial meningitis is a generic term defined as inflammation of the membranes of the spinal cord or brain caused by bacteria that reach the meninges via blood or lymph through trauma, or from adjacent body structures (e.g. sinuses, mastoid cells). For the purpose of this document bacterial meningitis is defined as a group of diseases characterized by infection of the meninges caused by a bacteria other than *Neisseria meningitidis* or *Haemophilus influenzae* type b, and excludes aseptic meningitis. Symptoms can include fever, headache, stiff neck, vomiting, and rash. The incubation period ranges from 2 to 10 days. Mode of transmission is by direct person-to-person contact, including respiratory droplets from nose and throat of infected people. Post-exposure prophylaxis of contacts is generally not recommended.

Laboratory Criteria for Surveillance Purposes

- Isolation and identification of a bacterial pathogen from the CSF or blood.

Surveillance Case Definitions

- *Confirmed:* a clinically compatible case that is laboratory confirmed or has a positive blood culture

Comment

- **Report suspect cases by telephone immediately.**
- Kansas laws require that isolates be sent to the Kansas Health and Environmental Laboratory for serotyping.

Epidemiology and Trends

2002 Case Total	**14**
Kansas rate	0.5 per 100,000
U.S. rate (2000)	N/A

In 2002, there were 14 reported cases of non-meningococcal, non-*Haemophilus influenzae* type B bacterial meningitis. All cases appeared to be sporadic. All but one isolate was speciated -- 11 as *Streptococcus pneumoniae,* one as *Kingella kingae*, and one as *Streptococcus agalactiae* Group B.

MENINGOCOCCAL DISEASE

Meningococcal disease is an acute bacterial disease caused by *Neisseria meningitidis*, a Gram-negative diplococcus. The most common serogroups of *N. meningitidis* in the U.S. are B, C, W-135, and Y. Late winter to early spring is the peak season for infection, but infections can occur at any time of the year. Even with early diagnosis and appropriate treatment, the fatality rate of meningococcal meningitis is 5-15%. The disease manifests most commonly as meningitis and/or meningococcemia that may progress rapidly to purpura fulminant, shock, and death. The disease is characterized by sudden onset with fever, intense headache, nausea and often vomiting, and stiff neck. Up to 15% of populations may carry *N. meningitidis* in the nasopharynx without developing invasive disease, while a few develop bacteremia, sepsis, meningitis, or pneumonia. The incubation period ranges from two to 10 days, usually three to four days. Transmission of *N. meningitidis* is from person to person by direct contact with respiratory droplets from the nose and throat of infected people. A vaccine is available for use in outbreaks if A, C, Y or W-135 serogroups are implicated. There is no vaccine for serogroup B, historically responsible for 20-30% of reported cases in Kansas. Chemoprophylaxis is used for close contacts of cases (e.g., household members, intimate contacts, health care personnel performing mouth-to-mouth resuscitation, day care center play-mates). No chemoprophylaxis is recommended for less intimate contacts (e.g., school mates, health care workers with minimal contact, and etc.) except during an outbreak or in a child care center.

Laboratory Criteria for Surveillance Purposes

- Isolation of *Neisseria meningitidis* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, joint, pleural, or pericardial fluid). (Note: a positive antigen test is not sufficient to confirm a case for surveillance purposes.)

Surveillance Case Definitions

- *Confirmed*: a clinically compatible case that is laboratory confirmed.
- *Probable*: a case with a positive antigen test in CSF or clinical purpura fulminant in the absence of a positive blood culture.

Comment

- **Report suspect cases by telephone immediately.**
- KAR 28-1-18 requires that isolates be sent to the Kansas Health and Environmental Laboratory.
- Positive antigen test results from urine or serum samples are unreliable for diagnosing meningococcal disease.

Note: Advisory Committee on Immunization Practices has modified its guidelines for use of the meningococcal vaccine, particularly for college freshman who live in dormitories. This group has been found to be at increased risk relative to other persons their age. The recommendation is that those who provide medical care for this group give information to students and their parents about meningococcal disease and the benefits of vaccine.

Vaccine should be made easily available to those who wish to reduce their risk of meningococcal disease.

Epidemiology and Trends

2002 Case Total	8
Kansas rate	0.3 per 100,000
U.S. rate (2001)	0.8 per 100,000

The number of cases of meningococcal meningitis decreased from 11 cases reported in 2001 to 8 cases reported during 2002. These were sporadic cases; no outbreaks were detected. The three-year median for 2000-2002 was 11 cases. The cases ranged in age from less than 1 to 72 years of age. Although rates of meningococcal disease are usually highest among children aged <1 year, 63% of the cases in 2002 occurred among persons aged $\geq$ 18 years. The median age was 43 years. The majority of the cases were female (63%) and were reported from non urban areas (63%) All isolates were sent to DHEL and serotyped as follows: C (1), W135 (1), B(2). Serotype for 4 isolates is unknown.

MUMPS

Mumps is an acute viral disease caused by a paramyxovirus. It is characterized by fever, swelling and tenderness of one or more salivary glands, usually the parotid and sometimes the sublingual or submaxillary glands. Orchitis may occur in males and oophoritis in females. Winter and spring are the usual times of increased occurrence. The incubation period is 12 to 25 days, commonly 18 days. Mumps is transmitted by droplet spread and by direct contact with the saliva of an infected person.

Vaccine is available either as a single vaccine or in combination with rubella and measles live-virus vaccines (MMR). The vaccine has been available since 1971. The current recommendation is a routine two-dose MMR vaccine schedule, with the initial dose administered at 12-15 months of age. The second dose should be given at school entry (4-6 years of age).

Clinical Criteria

An illness with acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland, lasting $2 days, and without other apparent cause.

Laboratory Criteria for Surveillance Purposes

- Isolation of mumps virus from clinical specimen, ***or***
- Significant rise between acute- and convalescent-phase titers in serum mumps immunoglobulin G antibody level by any standard serologic assay, ***or***
- Positive serologic test for mumps immunoglobulin M (IgM) antibody.

Surveillance Case Definitions

- *Confirmed:* a case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a confirmed or probable case. A laboratory confirmed case does not need to meet the clinical case definition.
- *Probable:* a case that meets the clinical case definition, has noncontributory or no serologic or virologic testing, and is not epidemiologically linked to a confirmed or probable case.

Comment

- **Report suspect cases by telephone immediately.**
- All suspected, probable, and confirmed cases of mumps are reportable and reviewed by the KDHE Immunization Program staff for appropriate control measures.

Epidemiology and Trends

2002 Case Total	2
Kansas rate	0.1 per 100,000
U.S. rate (2001)	0.1 per 100,000

In 2002, two mumps cases were reported in Kansas. They were unrelated sporadic cases. None had documentation of mumps vaccination. There were significant outbreaks of mumps in Kansas in 1988 and 1989 among under-immunized people. Since 1992, there have been 0-2 cases reported annually in the state.

The national mumps immunization goal for the year 2010 is to achieve a 90% coverage rate among two-year-old children for the complete series of mumps vaccinations. Estimated Kansas immunization coverage rate of the National Immunization Survey for the first dose of the measles, mumps, and rubella vaccine (MMR1) was 93.9 ($\pm$ 2.8%) in 2002.

PERTUSSIS (Whooping Cough)

Pertussis is a bacterial disease involving the respiratory tract caused by the bacillus, *Bordetella pertussis*. Cough is the characteristic symptom, and it can become paroxysmal within one to two weeks. The cough is often followed by a characteristic inspiratory whoop and may be accompanied by post-tussive or vomiting. Although pertussis affects all age groups, it is particularly severe and more commonly recognized and diagnosed in infants and young children. The disease can be fatal in young children. The disease is usually less severe among older children and adults. Fever is usually minimal throughout the course. Infants may present with apnea or cyanosis, while adults may present only with a chronic spasmodic cough. The incubation period is commonly 5 - 10 days, up to 21 days. Transmission is by contact with respiratory secretions of infected persons. Active immunization with five doses of DTaP (diphtheria and tetanus toxoid and acellular pertussis) vaccine at 2, 4, and 6 months, at 12-15 months and at school entry (4-6 years of age) can prevent this disease among young children. The efficacy of the vaccine in children who have received at least 3 doses is estimated to be 80%. Immunity begins to wane 3 years after last vaccination. In recent years, pertussis has been increasingly recognized among adolescents and young adults. No pertussis vaccine is licensed for use in people over seven years old.

Clinical Criteria

A cough illness lasting $2 weeks with one of the following: paroxysms of coughing, inspiratory "whoop," or post-tussive vomiting, without other apparent cause.

Laboratory Criteria for Surveillance Purposes

- Isolation of *Bordetella pertussis* from clinical specimen ***or***
- Positive polymerase chain reaction for *B. pertussis*.

Surveillance Case Definitions

- *Confirmed:* a case that is laboratory confirmed or one that meets the clinical case definition and is epidemiologically linked to a laboratory-confirmed case.
- *Probable:* a case that meets the clinical case definition, is not laboratory confirmed, and is not epidemiologically linked to a laboratory-confirmed case.

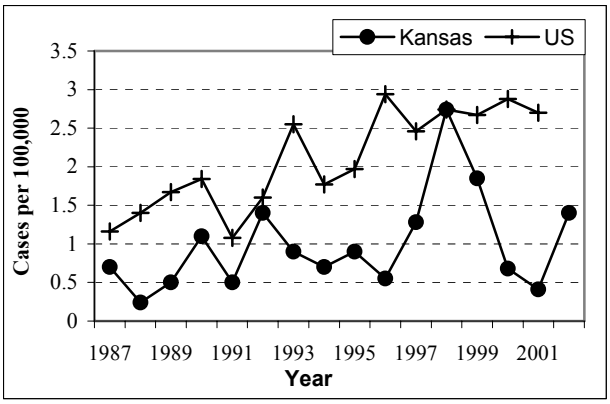
Comment

- **Report suspect cases by telephone immediately.**
- All suspected cases of pertussis are reportable and reviewed by the KDHE Immunization Program staff for appropriate control measures.

Epidemiology and Trends

2002 Case Total	38
Kansas rate	1.4 per 100,000
U.S. rate (2001)	2.7 per 100,000

Pertussis incidence rates by year
Kansas, 1987-2002



In 2002, a total of 38 cases of pertussis were reported, an increase of 71% from the previous year of 11 cases. The three-year median for 1999-2001 was 18 cases. The cases ranged in age from infants less than 1 year to 93 years of age. The rate among children less than 5 years of age was 11.7 cases per 100,000 population and accounted for 58% of total pertussis morbidity. The ratio of female (26) to male (12) was about 2:1. The majority of the cases were Whites (79%). *All reported cases were apparently sporadic. No outbreaks were reported.*

The national pertussis immunization goal for the year 2010 is to achieve a 90% coverage rate among two-year-old children for the complete series of vaccinations. Estimated Kansas immunization coverage rate of the National Immunization Survey for the fourth dose of the diphtheria, tetanus, and pertussis vaccine (DTP4) was 76.2% (± 6.5%) in 2002.

Q FEVER

Q fever is a zoonotic disease caused by Coxiella burnetii, a rickettsial organism. It is an acute, generalized disease with variable clinical manifestations; fever, headache, rash, myalgia, chills, and upper and lower respiratory tract disease presentations are common. Cattle, sheep, goats, cats, dogs, feral rodents, birds, and ticks are natural reservoirs of the organism and usually show no clinical signs of illness. Transmission to humans is commonly by airborne dissemination of rickettsiae in the dust from premises contaminated by placental tissues, birth fluids, and excreta of infected animals. Infection could also occur by direct contact with infected animals and other contaminated materials, such as milk, wool, straw, fertilizer, and laundry of infected people. A single C. burnetii organism may cause disease in a susceptible person and the organisms can survive in the environment for long periods due to resistance to heat, drying, and many common disinfectants. Direct transmission by blood or marrow transfusion or by tick bite has also been reported. Transmission from person to person occurs rarely, if ever. Outbreaks are generally of short duration with control measures limited primarily to elimination of sources of infection. The incubation period is usually 2-3 weeks. Onset may be sudden with chills, retrobulbar headache, weakness, malaise and severe sweats. Duration and severity vary considerably with infections not apparent or presenting as nonspecific "fever of unknown origin". Respiratory symptoms are disproportionately mild as compared to the extensive pneumonitis is found on chest x-ray in some cases. Abnormal liver function tests are common. Acute and chronic granulomatous hepatitis and chronic endocarditis have been reported. Only 1%-2% of people with acute Q fever die of the disease. This highly infectious agent could be developed for use in biological warfare and is considered a potential terrorist threat.

Clinical Criteria

- A case with a clinical presentation sufficient to cause suspicion on the part of the evaluation physician.

Laboratory Criteria for Surveillance Purposes

- Four-fold or greater rise in specific antibodies between acute and convalescent phase sera by IF, microagglutination, CF or ELISA tests, **or**
- Demonstration of Coxiella in tissues by immunostains and EM.

Surveillance Case Definitions

- *Confirmed:* a clinically compatible case that is laboratory confirmed.

Epidemiology and Trends

2002 Case Total	1
Kansas rate	< 0.1 per 100,000
U.S. rate (2001)	< 0.1 per 100,000

In Kansas, Q Fever became reportable in the year 2000. The first Q fever case was reported in year 2002. Hospitalization was required. The contributing risk factor identified was occupational exposure to sheep and cattle.

RABIES, ANIMAL

Rabies is a viral infection caused by a rhabdovirus of the genus *Lyssavirus*. The disease affects the nervous system of mammals. Symptoms may include behavior changes, such as unusual aggressiveness or paralysis. No treatment is effective after the onset of symptoms -- rabies is considered fatal at this point. Transmitted by saliva from an infected animal's bite, the incubation period of rabies ranges from two weeks to many months. Vaccinations in dogs, cats, ferrets and livestock prior to exposure can protect against the disease.

A dog, cat, or ferret inflicting a bite may be observed daily for 10 days following a bite to rule out the risk of rabies transmission. If the animal develops signs of rabies or dies during the 10-day period, or if the animal is considered wildlife or an exotic species, it must be euthanized humanely and arrangements must be made for rabies examination. Bats, raccoons, foxes, skunks, and other carnivorous wildlife are presumed rabid until confirmed negative by laboratory diagnosis. Rodents, rabbits, hares, and opossums rarely transmit rabies, but any animal exhibiting unusual behavior should be suspected of carrying rabies.

Animal heads for rabies examination should be wrapped in several layers of plastic bags, placed in a leak-proof container with frozen gel packs, sealed, placed into a shipping box with a submission form, and sent to:

Veterinary Diagnostic Laboratory/Rabies Laboratory
College of Veterinary Medicine
Kansas State University - V.C.S. Building
1800 North Denison Avenue
Manhattan, KS 66506-5601

Contact the KSU rabies lab (785-532-4483) or KDHE (785-296-2951) for additional information on submitting specimens, or to answer other questions on rabies.

Laboratory Criteria for Surveillance Purposes

- A positive direct fluorescent antibody test (preferably performed on central nervous system tissue), ***or***
- Isolation of rabies virus (in cell culture or in a laboratory animal).

Surveillance Case Definitions

- *Confirmed:* a case that is laboratory confirmed.

Comment

- More detailed information on rabies in Kansas can be found at:
  www.vet.ksu.edu/depts/rabies/kansas.htm.

Epidemiology and Trends

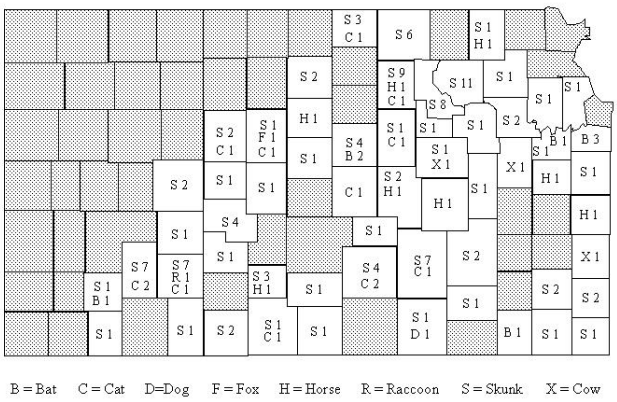
2002 Case Total 153

Counties reporting rabid animals 62 (59%)

Types of rabid animals

Wildlife	129 (84%)
Domestic Pets	13 (8%)
Livestock	11 (7%)

Animal Rabies Cases by County, Kansas, 2002



In Kansas, 153 laboratory confirmed cases of rabies in animals were reported during 2002, an increase from the 100 cases reported in 2001. The three-year median for 1999-2001 was 100 cases. Sixty-two counties reported at least one rabid animal in 2002. Wildlife species accounted for 129 (84%) of diagnosed cases; 119 skunks accounted for 92% of the wildlife species and 78% of the total. Other wildlife species included eight bats, one fox, and one raccoon. Twenty-four rabies cases were among domestic animals with cats (12) being the predominant domestic animal.

Rabies was not found in the following animals tested in Kansas during the past 13 years (1991-2002):

Antelope, Baboon, Badger, Beaver, Bison, Chipmunk, Coati, Cougar, Deer, Ferret, Ground Squirrel, Gerbil, Goat, Gopher, Groundhog, Guinea Pig, Hamster, Hedgehog, Human, Lion, Llama, Mink, Mole, Mouse, Muskrat, Pig, Porcine, Porcupine, Prairie Dog, Primate, Pronghorn, Rabbit, Rat, Ringtail, Squirrel, Tiger, Weasel, Wolf, Woodchuck, other rodents/ lagomorphs.

Positive Animal Rabies Species, Kansas, 2002

Species	Number Tested	Number Positive	Percent Positive
Bat	166	8	4.8
Cat	695	12	1.7
Cow	60	3	5.0
Dog	433	1	0.2
Fox	2	1	50.0
Horse	74	8	10.8
Raccoon	98	1	1.0
Skunk	205	119	58.0

SALMONELLOSIS (non-typhoidal)

Salmonellosis is an enteric, zoonotic, bacterial disease caused by one of almost 2,500 pathogenic *Salmonella spp*. In humans, illness usually appears 12-36 hours after infection and consists of fever, headache, diarrhea, abdominal pain, nausea, and sometimes vomiting. Children younger than 4 years of age, elderly individuals, and persons with immunosuppressive conditions may experience severe complications, including invasive infection and mortality. Naturally found in poultry, livestock, reptiles, and pets, transmission of *Salmonella spp.* may occur through the handling of raw poultry or eating raw or undercooked poultry products, contact with infected reptiles, or ingestion of contaminated water. Prolonged asymptomatic shedding in the feces may also occur, promoting person-to-person transmission in the absence of good handwashing.

Laboratory Criteria for Surveillance Purposes

- Isolation of *Salmonella spp.* from a clinical specimen[*].

Surveillance Case Definitions

- *Confirmed:* a case that is laboratory confirmed.
- *Probable:* a clinically compatible case that is epidemiologically linked to a confirmed case.

Outbreaks

In August 2002, the KDHE Laboratory reported an indistinguishable pulsed-field gel electrophoresis (PFGE) pattern among *Salmonella Typhimurium* stool isolates taken from five Meade County residents. The epidemiologic investigation revealed that all the cases were linked to a gathering during which homemade ice cream with raw eggs was served. A retrospective cohort study was conducted, and a statistically significant association was found between illness and eating ice cream [Fisher exact 2-tailed p-value = 0.003]. Though neither the homemade ice cream nor raw eggs were available for testing, the epidemiologic evidence indicated that the homemade ice cream was the source of infection.

[*] K.A.R. 28-1-18 requires that isolates be sent to the KDHE Laboratory.

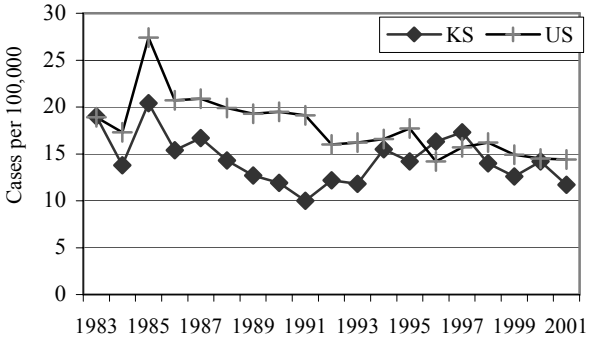
Epidemiology and Trends

2002 Case Total	354
Kansas Rate	13.0 per 100,000
U.S. Rate (2001)	14.4 per 100,000
Rate by gender	
Female	13.0 per 100,000
Male	12.6 per 100,000
Rate by race	
White	8.7 per 100,000
Black	15.1 per 100,000
Asian/Pacific Islander	6.6 per 100,000
Native American	6.5 per 100,000
Rate by ethnicity	
Hispanic	9.2 per 100,000
Non-Hispanic	7.5 per 100,000
Rate by geographic area	
Urban	10.5 per 100,000
Non-Urban	15.6 per 100,000

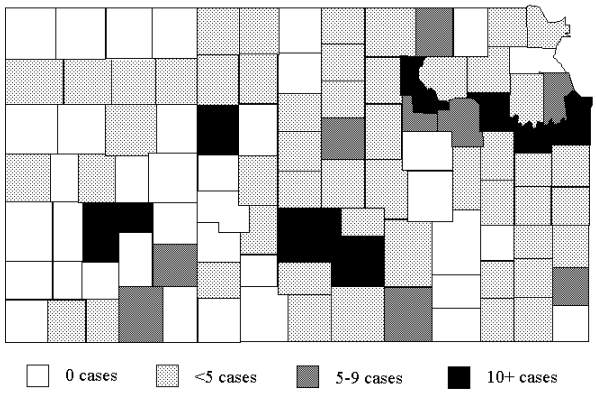
In 2002, the 354 cases of Salmonellosis reported in Kansas represent an 11% increase compared to the 314 cases reported in 2001. The three-year median for 1999-2001 was 333 cases. The cases ranged in age from less than 1 year to 93 years, with a median age of 22 years. Though Salmonellosis occurred in persons of all age groups, 23% of cases occurred in those less than 5 years of age (42.3 per 100,000).

The ratio of female to male cases was one to one. Of the cases, 213 (60%) were White, 26 (7%) were African-American, 4 (1%) were Asian/Pacific Islanders, and 2 (<1%) were Native American. Race was not reported for 108 (31%) of the cases. Hispanic ethnicity accounted for 19 (5%) of the cases, although ethnicity was not reported in 148 (42%) of cases. More than one-third of the cases resided in Sedgwick (46), Johnson (38), Wyandotte (25) and

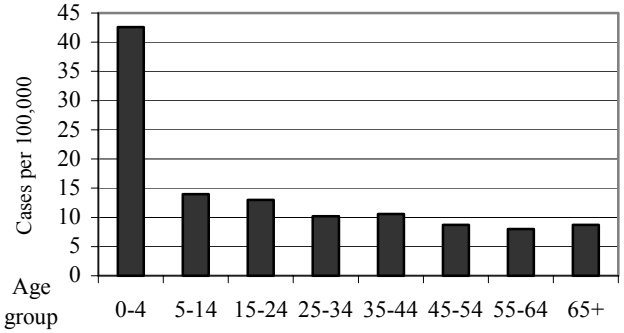
Salmonellosis rate by year
Kansas, 1983-2002



Salmonellosis counts by county
Kansas, 2002



Salmonellosis rate by age group



Shawnee (24). Though most of the reported cases were apparently sporadic, one outbreak of *S. Typhimurium* associated with the consumption of raw eggs was detected in Meade County.

Serotype information was available for 328 (93%) of the Salmonellosis cases reported. The five most frequently isolated serotypes were the following: *S. typhimurium* (82), *S. Newport* (58), *S. enteritidis* (31), *S. heidelberg* (17), and *S. Oranienburg* (16).

SHIGELLOSIS

Shigellosis is a human bacterial infection caused by *Shigella spp*. In the United States, *S. sonnei, S. flexneri,* and *S. boydii* account for most of the cases. Illness appears between 12 and 96 hours after exposure to even very few organisms. Symptoms often include watery or bloody diarrhea, fever, nausea, and abdominal cramps. Because humans serve as the natural host for *Shigella spp*., the bacteria are spread primarily via the fecal-oral route through direct person-to-person transmission and less commonly through food or water. Daycare settings and crowded living conditions have been implicated as the source of many outbreaks and transmission into the community.

Laboratory Criteria for Surveillance Purposes

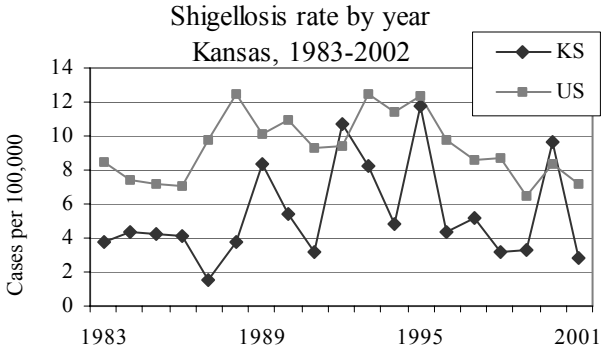
- Isolation of *Shigella spp.* from a clinical specimen*.

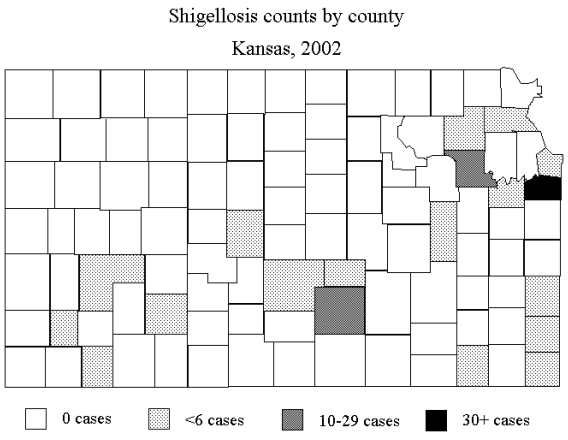
Surveillance Case Definitions

- *Probable:* a clinically compatible case that is epidemiologically linked to a confirmed case.
- *Confirmed:* a case that is laboratory confirmed.

Epidemiology and Trends

2002 Case Total	92
Kansas Rate	3.4 per 100,000
U.S. Rate (2001)	7.2 per 100,000
Rate by gender	
Female	3.9 per 100,000
Male	2.7 per 100,000
Rate by race	
White	2.8 per 100,000
Black	3.5 per 100,000
Asian/Pacific Islander	1.7 per 100,000
Rate by ethnicity	
Hispanic	9.2 per 100,000
Non-Hispanic	2.2 per 100,000
Rate by geographic area	
Urban	5.0 per 100,000
Non-Urban	1.7 per 100,000



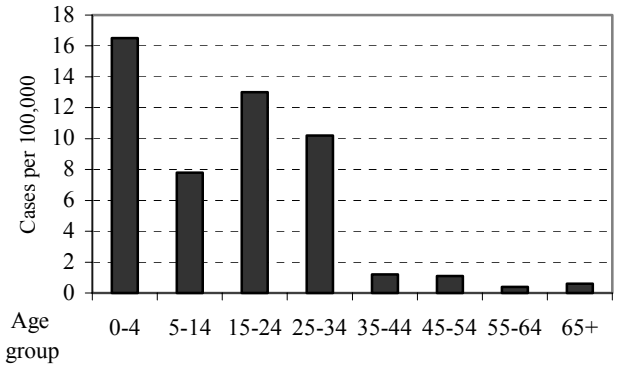


* K.A.R. 28-1-18 requires that isolates be sent to the KDHE Laboratory.

In 2002, there were 92 cases of shigellosis reported in Kansas. This is a 19% increase compared to the 77 cases reported in 2001. No outbreak was reported. The three-year median for 1999-2001 was 89 cases. Cases ranged in age from less than 1 year to 68 years; median age was 7 years. Children less than 5 years comprised 31% of the cases and with the highest age-specific incidence rate, 16.5 case per 100,000 population. The ratio of female to male was about one to one. Three-fourths of the cases were reported from urban areas, with Johnson County accounting for 30 (33%) of the total cases reported.

The serotype was identified for 81 (88%) of the 92 cases. Of these cases, 77% were *S. sonnei* and 8% were *S. flexneri*.

Shigellosis rate by age group



STREPTOCOCCAL INVASIVE DISEASE:
Group A *Streptococcus* or *Streptococcus pneumoniae*

Streptococcal invasive disease causes many clinical syndromes, depending on the site of infection (e.g., acute otitis media, pneumonia, bacteremia, or meningitis). "Invasive" refers to Group A *Streptococcus* or *S. pneumoniae* infections involving normally sterile sites (such as blood, cerebrospinal fluid, joint, pleural, or pericardial fluid). Streptococcal invasive disease is characterized typically by sudden onset with a shaking chill, fever, pleural pain, dyspnea, tachypnea, and leukocytosis. The onset may be less abrupt, especially in the elderly. In infants and young children, fever, vomiting and convulsions may be the initial manifestations. Symptoms vary depending on the site and route of infection. The incubation period is not well determined; it may be as short as 14 hours to 3 days. Mode of transmission is by droplet spread, by direct oral contact, or indirectly through articles freshly soiled with respiratory discharges. Person-to-person transmission of the organisms is common, but illness in invasive disease among close and casual contacts, and attendants is infrequent.

Laboratory Criteria for Surveillance Purposes

- Isolation of Group A *Streptococcus* (*Streptococcus pyogenes*) or *Streptococcus pneumoniae* from a normally sterile site (e.g., blood, cerebrospinal fluid, joint, pleural, or pericardial fluid)

Surveillance Case Definitions

- *Confirmed:* a clinically compatible case that is laboratory confirmed.

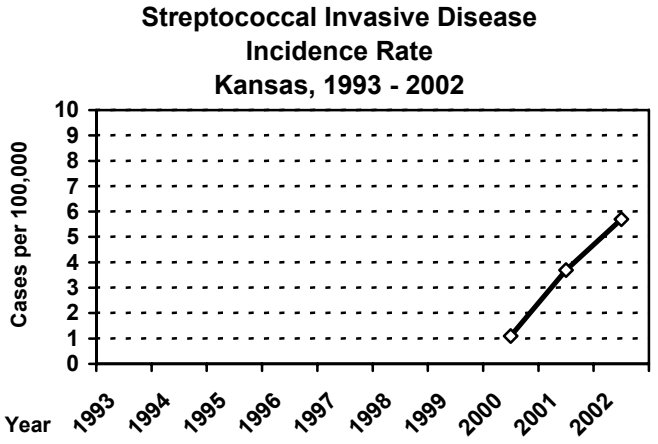
Comment

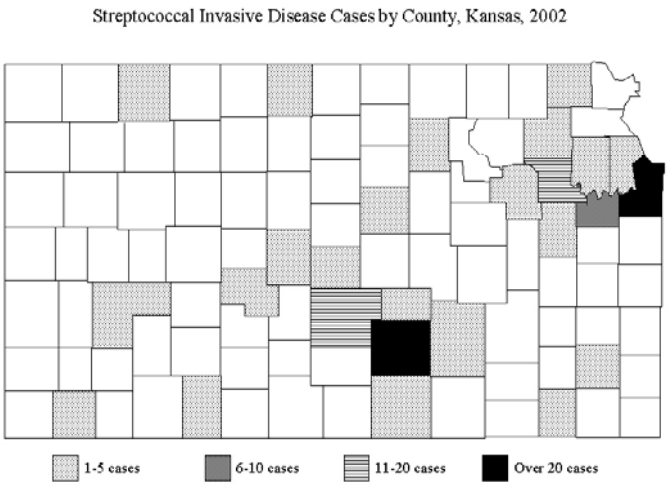
- K.A.R. 28-1-18 requires that isolates be sent to the Kansas Health and Environmental Laboratory.
- Previously, only drug resistant strains were reportable.

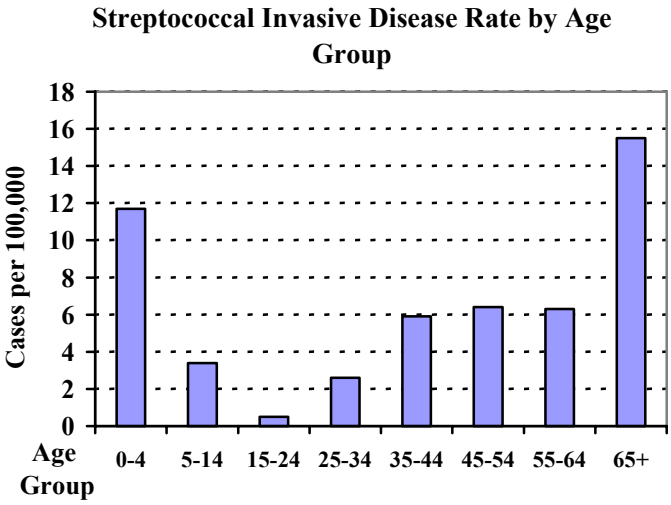
Epidemiology and Trends

2002 Case Total	165
Kansas rate	5.7 per 100,000
U.S. rate (2000)	N/A
Cases by gender	
Female	5.2 per 100,000
Male	6.8 per 100,000
Rate by race	
White	4.4 per 100,000
African-American	9.8 per 100,000
Asian/Pacific Islander	1.7 per 100,000
Rate by ethnicity	
Hispanic	4.4 per 100,000
Non-Hispanic	3.5 per 100,000
Rate by geographic area	
Urban	8.3 per 100,000
Rural	3.8 per 100,000

There were a total of 165 cases of streptococcal invasive disease: 43 Group A. *Streptococcus* and 122 *Streptococcus pneumoniae,* respectively. Reported cases continued to increase; 98 cases were reported in 2001 and 30 were reported in 2000. The increase may be due to more awareness and improvement in reporting of cases. The cases ranged in age from less than 1 to 100 years; median age was 50 years. Males were affected at a slightly higher rate than females. African-Americans were affected at nearly twice the rate of whites. The majority of the cases were residents of urban areas (69%).







SYPHILIS

Syphilis is a complex sexually transmitted disease caused by the spirochete Treponema pallidum.

The infection usually progresses through four stages:

- Primary Syphilis: the most infectious stage, characterized by one or more chancres (ulcers) that appear 10 to 90 days after exposure. The chancre appears at the site of exposure and heals within one to four weeks, even without treatment.

- Secondary Syphilis: a stage of infection characterized by localized or diffuse mucocutaneous lesions, often with generalized lymphadenopathy. The primary chancre may still be present. The skin eruptions can appear as a variety of different rashes and may begin while the chancre is present. However, it usually starts four weeks after the chancre resolves and can occur up to six months after inoculation. The rash resolves in two to six weeks, but may recur with infectious lesions for the first year of the disease. The most common secondary rash is a maculopapular rash of the palms and soles.

- Early Latent Syphilis: occurs when the primary and secondary symptoms resolve and lasts throughout the first year of infection. This stage represents the asymptomatic stage of the infection, however, all serologic tests for syphilis will be positive.

- Late Syphilis: characterized by manifestations that occur 5 to 20 years after infection. They include gummas (a lump with gummy contents); destructive lesions of the skin, viscera, bone and mucosa surfaces; cardiovascular syphilis, destructive lesions of the aorta; and neurosyphilis, destruction of areas of the central nervous system including the brain. Late syphilis can cause death or permanent disability.

Fetal infection often occurs in pregnant women with untreated primary, secondary or early latent syphilis. It can also occur, with less frequency, in women who have untreated late latent syphilis. This infection may cause stillbirth, infant death, or severe

complications that do not manifest and become apparent until much later in life. Syphilis is transmitted by direct contact with infectious exudates from lesions of the skin and mucous membranes, body fluids and secretions (saliva, semen, blood, vaginal discharges) of infected people during sexual contact. Transmission can occur through blood transfusion if the donor is in the early stages of the disease but is very rare. Fetal infection usually occurs through placental transfer or at delivery.

Laboratory Criteria for Surveillance Purposes

- Demonstration of T. pallidum in clinical specimens by darkfield microscopy, direct fluorescent antibody (DFA-TP), or equivalent methods, or by clinical manifestations of acquired infection.

Surveillance Case Definitions

- Confirmed: a clinically compatible case that is laboratory confirmed.

Comments

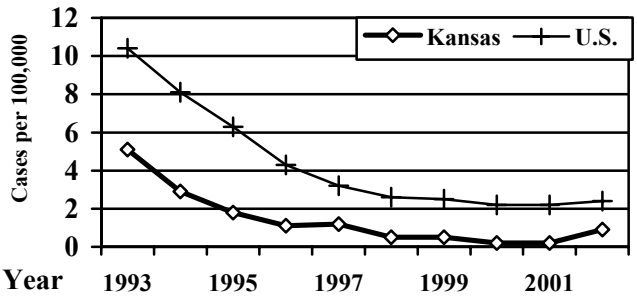
More detailed information on STDs in Kansas is available at:www.kdhe.state.ks.us/hiv-std.

PRIMARY AND SECONDARY SYPHILIS

Epidemiology and Trends

2002 Case Total	24
Kansas rate	0.9 per 100,000
U.S. rate (2000)	2.2 per 100,000

Primary and Secondary Syphilis Incidence Rate by Year, 1993 - 2002



In 2002, the number of reported primary and secondary syphilis cases (24) decreased eight percent from 2001 (26), with an incidence rate of 0.9 per 100,000. This is well above the 1999 national rate of 2.5 cases per 100,000 population. The three-year median for 1998-2000 was 12 cases. While

accounting for a small proportion of cases among the many reportable STDs in Kansas, syphilis remains important because of its potential for elimination as well as its role as risk factor for HIV infection and transmission.

The cases ranged from 18 to 54 years of age. The median age was 39.5 years. Mirroring the trend for gonorrhea, 81% of the cases in the state were reported from the four metropolitan areas.

CONGENITAL SYPHILIS

2002 Case Total	0
Kansas rate	0 per 100,000
U.S. rate (2000)	N/A

In 2001, there were two case of congenital syphilis reported in Kansas.

TOXIC SHOCK SYNDROME, streptococcal and staphylococcal

Toxic-shock syndrome (TSS) is a severe illness associated with invasive or noninvasive group A streptococcal (*Streptococcus pyogenes*) or staphylococcal infections. The illness may occur with infection at any site but most often occurs in association with infection of a cutaneous lesion. Signs of toxicity and a rapidly progressive clinical course are characteristic, and the case-fatality rate may exceed 50%. TSS is characterized by sudden onset of high fever, vomiting, profuse watery diarrhea, myalgia and hypotension, and shock. A rash, which may result in desquamation of the skin, occurs in the first two weeks of illness. The incubation period is usually 1-3 days. Strains of TSS bacteria are rarely present in vaginal cultures from healthy women, but are regularly recovered from women with menstrually associated TSS or in those with TSS following gynecologic surgery. Although almost early cases of TSS occurred in women during menstruation, and most were associated with vaginal tampon use, only 55% of cases now reported are associated with menses.

Clinical Criteria

An illness with the following clinical manifestations:

- *Fever:* temperature $102.0 F ($38.9 C).
- *Rash:* diffuse macular erythroderma.
- *Desquamation:* 1-2 weeks after onset of illness, particularly on the palms and soles.
- *Hypotension:* systolic blood pressure $\leq$90 mm Hg for adults or less than fifth percentile by age for children aged <16 years; orthostatic drop in diastolic blood pressure $\geq$15 mm Hg from lying to sitting, orthostatic syncope, or orthostatic dizziness.
- *Multi-system involvement* -- three or more of the following:
    - *Gastrointestinal:* vomiting or diarrhea at onset of illness.
    - *Muscular:* severe myalgia or creatine phosphokinase level at least twice the upper limit of normal for laboratory.
    - *Renal:* blood urea nitrogen or creatine at least twice the upper limit for normal for laboratory or urinary sediment with pyura ($\geq$5 leukocytes per high-power field) in the absence of urinary tract infection.
    - *Hepatic:* total bilirubin, serum glutamic-oxaloacetic transaminase (SGOT), or serum glutamic-pyruvic transaminase (SGPT) at least twice the upper limit of normal for laboratory.
    - *Central Nervous System:* disorientation or alterations in consciousness without focal neurologic signs when fever and hypotension are absent.

Laboratory Criteria for Surveillance Purposes

Negative results on the following tests, if obtained:

- Blood, throat, or cerebrospinal fluid cultures (blood culture may be positive for

Staphylococcus aureus).

- Rise in titer to Rocky Mountain Spotted Fever, leptospirosis, or measles.

Surveillance Case Definitions

- *Confirmed:* a case which meets the laboratory criteria and in which all five of the clinical findings described above are present, including desquamation, unless the patient dies before desquamation occurs
- *Probable:* a case which meets the laboratory criteria and in which four of the five clinical findings described above are present

Epidemiology and Trends

2002 Case Total	1
Kansas rate	0.15 per 100,000
U.S. rate (2001)	0.05 per 100,000

There were one cases of toxic shock syndrome in a teenage male reported in 2002. The case was hospitalized and death was reported. S*treptococcus* was identified as the cause of illness.

TUBERCULOSIS

Tuberculosis is a disease caused by a *Mycobacterium tuberculosis* complex that can be spread from person to person through the air. This complex includes *M. tuberculosis* and *M. africanum* primarily from humans, and *M. bovis* primarily from cattle. The most common site of disease is the lungs (pulmonary TB), but other organs (extrapulmonary TB) may be involved (e.g., brain, lymph nodes, kidneys, bones, joints, larynx, intestines, eyes). Tuberculosis is transmitted by exposure to tubercle bacilli through inhalation in airborne droplet nuclei from people with active pulmonary TB. Prolonged close contact with these cases may lead to infection. Systemic symptoms include low-grade fever, night sweats, fatigue, and weight loss. In pulmonary or laryngeal TB, there may also be hemoptysis (i.e., bloody sputum), a persistent and productive cough, chest pain, and shortness of breath. The incubation period is about 2-12 weeks from infection to demonstrable primary lesion or significant tuberculin reaction. Epidemics of tuberculosis have occurred among individuals in enclosed places, such as nursing homes, jails, hospitals, schools, office buildings, and factories. Tuberculosis is treatable with the use of medications. There are multi-drug resistant (i.e., resistant to both isoniazid and rifampin) forms of *M. tuberculosis*, fortunately rare in Kansas.

Clinical Criteria

A case that meets the following criteria:

- A positive tuberculin skin test.
- Other signs and symptoms compatible with tuberculosis (e.g., an abnormal, unstable [i.e., worsening or improving] chest radiographs, or clinical evidence of current disease).
- Treatment with two or more antituberculosis medications.
- Completed diagnostic evaluation.

Laboratory Criteria for Surveillance Purposes

- Isolation of *M. tuberculosis* from a clinical specimen ***or***
- Demonstration of *M. tuberculosis* from a clinical specimen by nucleic acid amplification test, ***or***
- Demonstration of acid-fast bacilli in a clinical specimen when a culture has not been or cannot be obtained.

Surveillance Case Definitions

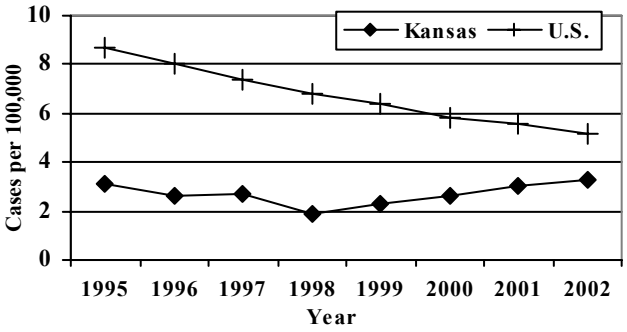
- *Confirmed:* a case that meets the clinical case criteria or is laboratory confirmed.

- K.A.R. 28-1-18 requires isolates be sent to the Kansas Health and Environmental Laboratory.

Epidemiology and Trends

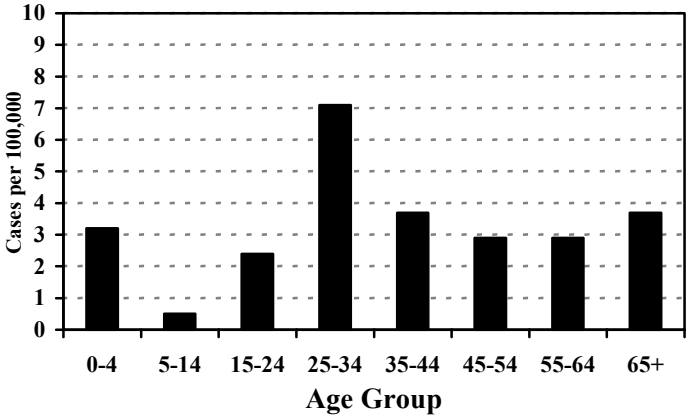
2002 Total Case	89
Kansas rate	3.3 per 100,000
U.S. Rate (2002)	6 per 100,000
Rate by gender	
Female	2.6 per 100,000
Male	4 per 100,000
Rate by race	
White	0.9 per 100,000
African-American	11 per 100,000
Asian/Pacific Islander	36.5 per 100,000
Native American	0
Rate by ethnicity	
Hispanic	13.1 per 100,000
Non-Hispanic	2.5 per 100,000
Rate by geographic area	
Urban	4.6 per 100,000
Non-Urban	1.9 per 100,000
***Number** of cases by Origin*	
U.S. born	39
Foreign born	50

Tuberculosis Incidence Rate by Year
Kansas, 1995-2002



Age Group	# Cases	% Cases
0 - 4	6	6.74%
5 - 14	2	2.24%
15 - 24	10	11.24%
25 - 34	25	28.09%
35 - 44	15	16.85%
45 - 54	11	12.36%
55 - 64	7	7.86%
65 +	13	14.62%
Total	89	100.00%

Tuberculosis Rate by Age Group



In Kansas during 2002, there were 89 reported cases of active TB disease, an increase of 9 cases from 80 cases in 2001. The three-year median for 1998-2000 was 69 cases. The state's major metropolitan areas again reported the majority of cases of TB. Sedgwick County once again reported the highest number of new cases of active TB disease with 29. Fifty-four (61%) of the state's cases were among males and 35 (39%) were among females. In 2002, eight cases were reported among children under the age of 14, compared to six cases in 2001. Ten cases were reported for the age group 15-24; forty for the age group 25-44; eighteen for the age group 45-64; and thirteen among individuals over the age of 65. TB cases in Kansas are not evenly distributed among the various racial and ethnic groups. The distribution was 22 Asian/Pacific Islanders (28%), 27 Hispanics (30%), 21 Whites (21%), and 19 African-Americans (21%). During 2002, there were four reported cases of HIV co-infection and two cases of multi-drug resistant TB in the state.

TULAREMIA

Tularemia is caused by the bacterium *Francisella tularensis*, with a variety of clinical presentations depending on route of exposure. Symptoms include lymphadenopathy, with or without cutaneous ulceration; pharyngitis, sepsis, intestinal signs, pneumonic disease, and a typhoidal illness without localizing signs. It is transmitted by arthropods, inoculation, when handling contaminated material, by drinking contaminated water, ingesting contaminated food, inhalation of the organism in contaminated dust, or by bites of contaminated animals. The incubation period ranges from1-14 days, usually 3-5 days. Clinical diagnosis is supported by evidence or history of a tick or deerfly bite, exposure to tissues of a mammalian host of *Francisella tularensis*, or exposure to potentially contaminated water. People who spend a great deal of time outdoors are at greater risk of exposure to tularemia. In the U.S.A., tularemia occurs in all months of the year; incidence may be higher in adults in early winter during rabbit hunting season and in children during the summer when ticks and deer flies are abundant.

Laboratory Criteria for Surveillance Purposes

Confirmatory

- Isolation of *F. tularensis* from a clinical specimen, ***or***
- Fourfold or greater change in serum antibody titer to *F. tularensis* antigen

Presumptive

- Elevated serum antibody titer(s) to *F. tularensis* antigen (without documented fourfold or greater change) in a patient with no history of tularemia vaccination ***or***
- Detection of *F. tularensis* in a clinical specimen by fluorescent assay

Surveillance Case Definitions

- *Confirmed:* a clinically compatible illness that is laboratory confirmed
- *Probable:* a clinically compatible case with laboratory results indicative of presumptive infection

Comment: Tularemia is not a nationally notifiable disease.

Epidemiology and Trends

2002 Case Total	2
Kansas rate	0.07 per 100,000
U.S. rate (2001)	0.05 per 100,000

In 2002, there were 2 confirmed cases of tularemia reported, a decrease from the 7 cases reported in 2001, and 11 cases reported in 2000. Fifty four cases of Tularemia were reported in Kansas for the ten-year period
1992-2001.

VARICELLA (CHICKENPOX) DEATHS

The varicella zoster virus (VZV) is the causative agent of varicella, more commonly known as chickenpox. Chickenpox infection is characterized by generalized, itchy, vesicular rash. Blisters form, dry, and become scabs after a period of 4 -5 days. Fever and malaise are common. VZV may be transmitted by direct person-to-person contact or via contact with airborne respiratory droplets. The incubation period may be a short as 10 days or as long as 21 days; typically, it is from 14 to 16 days. In the United States, chickenpox incidence is highest in the spring. Nearly 85% of cases in the US occur among children under the age of 15.

While chickenpox is normally a mild, self-limiting disease, complications (such as secondary bacterial infections, pneumonia, meningitis, and encephalitis) may occur. Risk for these complications is highest among adults, the immunocompromised, and infants less than one year of age. Even with their low rate of incidence, adults account for greater than one third of varicella deaths.

The varicella zoster vaccine was created in Japan in 1970, but was not licensed for use in the United States until 1995. As a result, incidence since 1995 has decreased -- in 2000, varicella cases had decreased 71-84%.

Clinical Criteria

- Illness with acute onset of diffuse papovesicular rash without other apparent cause.

Laboratory Criteria for Surveillance Purposes

- Isolation of varicella virus from a clinical specimen, ***OR***
- Significant rise in serum varicella immunoglobulin G antibody by any standard serologic assay.

Surveillance Case Definitions

- *Confirmed:* a death with clinically compatible disease and laboratory confirmation of varicella virus, ***OR*** one that meets the clinical criteria and is epidemiologically linked to a laboratory-confirmed case.

Comment Varicella deaths became reportable in Kansas in 2000

Epidemiology and Trends

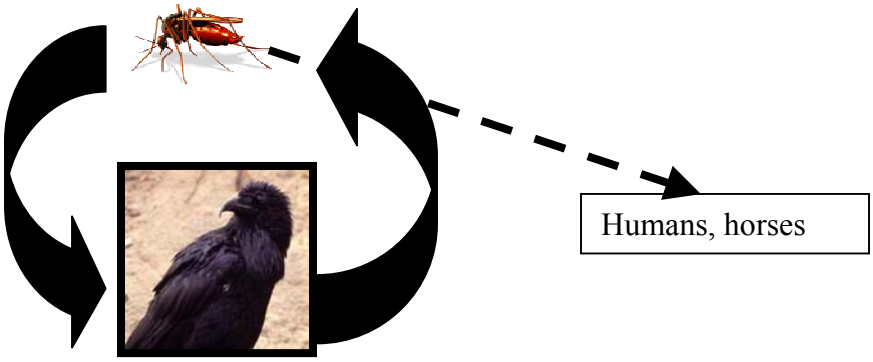
2002 Kansas Case Total	1
2002 U.S. Case Total	9

WEST NILE VIRUS ENCEPHALITIS/MENINGITIS

West Nile Virus (WNV) encephalitis/meningitis is an arboviral (arthropod borne virus) disease caused by a flavivirus. The incubation period is 3 to 14 days. WNV is transmitted by the bite of an infected mosquito; several species of mosquitoes are known to transmit WNV. The virus was first discovered in North America in 1999.

The natural transmission of WNV involves birds and mosquitoes (**Figure 1**). Several species of North American birds, including crow, bluejays, magpies and birds of prey appear to be especially likely to die if they contract the disease. Humans and horses do not circulate enough virus to re-infect a blood-feeding mosquito, and thus are referred to as dead-end hosts or accidental hosts. Human-to-human transmission of West Nile Virus is exceptionally rare, but has occurred among blood and organ recipients.

Figure 1
West Nile Virus Transmission Cycle



Clinical Criteria
WNV (and other arboviral) infections may be asymptomatic or may result in illness of variable severity sometimes associated with central nervous system (CNS) involvement. When the CNS is affected, clinical syndromes ranging from febrile headache to aseptic meningitis to encephalitis may occur, and these are usually indistinguishable from similar syndromes caused by other viruses. WNV meningitis is characterized by fever, headache, stiff neck and pleocytosis. WNV encephalitis is characterized by fever, headache, and altered mental status ranging from confusion to coma with or without additional signs of brain dysfunction (e.g., paresis or paralysis, cranial nerve palsies, sensory deficits, abnormal reflexes, generalized convulsions, and abnormal movements).

Laboratory Criteria for Surveillance Purposes

- Fourfold or greater change in virus specific serum antibody titer, ***or***
- Isolation of virus from or demonstration of specific viral antigen or genomic euences in tissue, blood, cerebral spinal fluid (CSF), or other body fluid, ***or***
- Virus specific immunoglobulin M (IgM) antibodies demonstrated in CSF by antibody-capture enzyme immunoassay (EIA), ***or***
- Virus specific IgM antibodies demonstrated in serum by antibody-capture EIA and confirmed by demonstration of virus specific serum immunoglobulin G (IgG) antibodies in the same or a later specimen by another serologic assay (e.g., neutralization or hemagglutination inhibition).

Surveillance Case Definitions

- *Confirmed:* an encephalitis or meningitis case that is laboratory confirmed.
- *Probable:* an encephalitis or meningitis case occurring during a period when arboviral transmission is likely and with the following supportive serology: 1) a single or stable (less than or equal to twofold change) but elevated titer of virus-specific serum antibodies; or 2) serum IgM antibodies detected by antibody-capture EIA but with no available results of a confirmatory test for virus-specific serum IgG antibodies in the same or later specimen.

Comment

- All confirmed cases of WNV meningitis/encephalitis were tested at the CDC laboratory in Fort Collins, CO.
- Because closely related arboviruses exhibit serologic cross- reactivity, positive results of serologic tests using antigens from a single arbovirus can be misleading.

Epidemiology and Trends

2002 Case Total	22
Kansas rate	0.8 per 100,000
U.S. rate (2002)	1.4 per 100,000

Cases by gender

Female	10
Male	12

Cases by geographic area

Urban	7
Nonurban	15

In 2002, nineteen confirmed WNV meningitis/encephalitis cases in humans were reported in Kansas; three additional cases were reported but not confirmed until early in 2003, for a total of 22 cases with onset during 2002. The first confirmed human case in Kansas had an onset date of 8/6/02. This was the first year that WNV was reported in Kansas. The median age for WNV meningitis/encephalitis cases in Kansas was 54 years with an age range of 10 to 83 years. Nationally, there were 4,156 laboratory positive human WNV cases reported in 2002.

In 2002, 103 of 105 Kansas counties reported WNV activity. West Nile Virus surveillance efforts in Kansas was relied on the collaboration of several agencies, including the Kansas State University (KSU), the University of Kansas (KU), the Department of Wildlife and Parks, the Kansas Animal Health Department, the Kansas Department of Agriculture, and local health departments. It is one of the few diseases where there is coordination of both human and animal surveillance in the state. The first case of West Nile Virus in Kansas was reported in a horse on August 8, 2002, approximately one month before the onset of the first reported human case in the state. A total of 794 equine specimens tested positive for WNV by the Kansas State University College of Veterinary Medicine either from serum or tissue samples. In addition, a Rocky Mountain goat and two squirrels in KS were found to have WNV.

The first West Nile positive sample in Kansas was a mosquito pool of *Culex tarsalis* collected on July 23, 2002. Limited mosquito trapping and testing was done throughout the state to determine the extent of the virus penetration in the state. Each group of trapped mosquitoes was divided by species, and the resulting divisions ("pools") were tested as a group for the presence of WNV and 21 mosquito pools were found positive for WNV.

Dead birds from around the state were collected and tested for the presence of the virus in tissues; 171 of the tested birds were found to have West Nile Virus.

SPECIAL REPORTS

KANSAS BIOTERRORISM PREPAREDNESS AND SMALLPOX VACCINATION PROGRAM – 2002

As the war on terrorism continued, new concerns about weapons of mass destruction surfaced. Past use of biological agents heightened the global concerns of the deadly potential these agents pose if unleashed on an unsuspecting population. The KDHE Bioterrorism Program, working with local and federal partners, improved the state's ability to respond to a potential bioterrorism attack. The 2002 highlights of the plan to protect Kansans and mitigate the potential for a large-scale outbreak and spread of disease from an attack using biological agents include:

Strengthening Planning and Coordination with Local Agencies
All 105 Kansas counties have developed and submitted to KDHE county plans for public health preparedness and response to Bioterrorism. KDHE staff offered extensive technical assistance to local public health officials to help them develop these plans. All 105 Kansas counties have signed contracts with KDHE for local bioterrorism preparedness and response activities.

Enhancing Communications Among Health Agencies
All 105 Kansas counties are participants in the Kansas Health Alert Network (HAN), an electronic system for transmission of alerts and emergency communications that links local health departments and hospitals to state and national public health and preparedness activities. The Public Health Information Exchange (PHIX), a new HAN component that allows secure, two-way, Web-based communications, is now in use in all counties.

Advanced Development of the Kansas Strategic National Stockpile Plan
The Kansas plan for receipt and distribution of shipments from the Strategic National Stockpile (SNS) is now in Version 2.3. CDC officials recommended no significant changes to our SNS planning process during their most recent site visit in October 2002.

Providing Top-Level Risk Communications Training
KDHE collaborated with the Kansas Health Foundation to hold a series of risk communications trainings for state and local Bioterrorism preparedness leaders with a national risk communications expert.

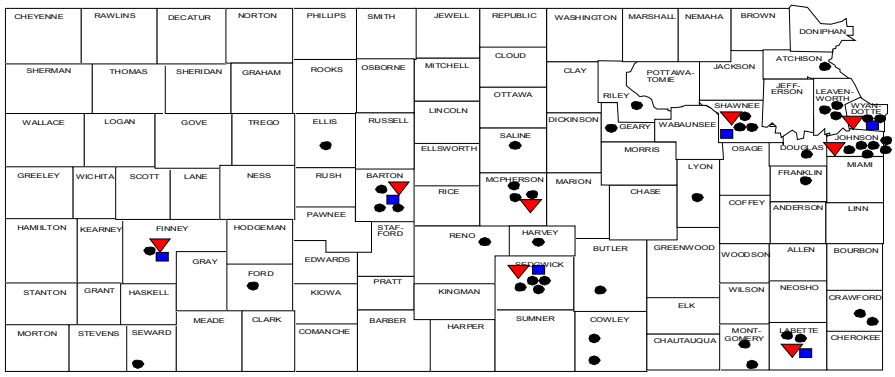
Enhancing Laboratory Operations and Security
The Kansas Division of Health and Environmental Laboratories has improved testing capacity, communications systems and security, and has established operational relationships with external partners. The laboratory division has achieved Bio-Safety Level 3 status.

REPORT OF THE KANSAS SMALLPOX VACCINATION PROGRAM

The Kansas Smallpox Vaccination Program was developed in response to the CDC's request that state and local governments form volunteer Smallpox Rapid Response Teams who can provide critical services to their communities in the event of a smallpox attack.

The Kansas Department of Health and Environment invited forty-three community hospitals, three VA hospitals, and twenty five local health departments located in counties with at least one city with a population of 10,000 or more to develop healthcare response and public health teams of vaccinated volunteers (Fig. 1).

Figure 1.



Eight clinic sites were selected in Kansas.

The pre-immunization activities included:

1) Identification of Rapid Response Teams. The Advisory Committee of Immunization Practices (ACIP) has recommended that teams be composed by the following type of workers:

- Emergency Room Staff, including physicians and nurses
- Intensive Care Staff, including physicians and nurses
- General Medical Unit Staff, including physicians and nurses
- Medical House Staff
- Medical Sub-specialists
- Infection Control Staff
- Respiratory Therapists
- Radiology Technicians
- Security Personnel
- Housekeeping Staff

2. Training. Training has been provided to hospital administrators, local health departments, and potential vaccine recipients through a variety of methods: face-to-face workshops, videos, and training manuals. The training goal has been to provide enough information for individuals to assess the risks and benefits of vaccination and understand the contraindications in order to make an informed decision about being vaccinated.

3. Medical pre-screening. Training has also been provided to medical screeners so that they can assess for medical conditions and contraindications to vaccination.

4. Identification of vaccination team. Ideally, a vaccination team should consist of 30 people, but it will depend on the actual number of individuals to be vaccinated in each clinic. The vaccination team should include: greeters, registration/educators, medical screeners, vaccinators/vaccinator aids, form collectors/exit form reviewers, data entry staff, clinic and supply manager, and a on-call medical doctor.

5. Train and immunize vaccinators. Seven public health and immunization nurses from KDHE have been vaccinated and trained as vaccinators by one of the public health nurses who attended the vaccination train-the-trainer workshop provided by CDC in Atlanta.

WEST NILE VIRUS 2002

West Nile Virus is an arbovirus (***ar***thropod ***bo***rne virus) that was first discovered in New York City in 1999. The virus had previously only been found in the Old World. Since 1999, West Nile Virus (WNV) has spread across the North American continent and several mosquito species have been implicated in transmission. The virus is amplified in birds that are bitten by an infected mosquito; birds are considered the natural host of WNV. Other animals, including humans are considered dead end (or accidental) hosts. A dead end hosts is one in which the level of circulating virus is not considered large enough to re-infect a mosquito.

KDHE began surveillance efforts in 2001, actively looking for WNV in the state. KDHE coordinated the WNV Surveillance efforts in Kansas relying on the collaboration of several agencies, including the Kansas State University (KSU), the University of Kansas (KU), the Department of Wildlife and Parks, the Kansas Animal Health Department, the Kansas Department of Agriculture, and local health departments.

In 2002, there were 4,156 laboratory confirmed cases and 284 deaths from WNV across the U.S. The first case of WNV in Kansas was reported in a horse on August 8, 2002; the first WNV activity discovered was a mosquito pool of *Culex tarsalis* collected on July 23, 2002. The first confirmed human case of WNV meningitis/encephalitis in Kansas had an onset date of 8/6/02. There were a total of 22 confirmed human cases of WNV meningitis/encephalitis in Kansas, with no reported deaths. There were 794 equine, 171 birds, 21 mosquito pools, a Rocky Mountain goat, and two squirrels found with WNV in Kansas in 2002. Reports of West Nile Virus activity were reported from 103 of 105 Kansas counties in 2002.

RETROSPECTIVE IMMUNIZATION COVERAGE SURVEY – 1998-1999 (SCHOOL YEAR 2002-2003)

Executive Summary

The Kansas Immunization Certificates (KCIs) for children five-years of age enrolled in a kindergarten class in a Kansas public school during the 2002-2003 school year were collected and evaluated for immunization coverage rates. The children included in this survey were born between September 2, 1996, and September 1, 1997, and the coverage rates refer to when they were two years old, which was between September 2, 1998, and September 1, 1999. Immunization coverage rates were also calculated for these children at 5 years of age. The results for this survey were measured against similar previous studies.

All 824 Kansas public schools were invited to participate. Eighty-six (10%) schools were not included in the data analysis (29 had no kindergarten class and 57 failed to respond). A representative sample of the five-year olds enrolled in kindergarten, which included 11,082 complete KCIs from 738 schools, was analyzed.

Coverage rates for the entire state of Kansas and individual counties were calculated for 4 doses of diphtheria, tetanus, and pertussis (DTP4), 3 doses of polio (Polio3), 1 dose of measles, mumps, and rubella (MMR1), 3 doses of *H. influenza* (HIB3), 3 doses of hepatitis B (HEPB3), 1 dose of varicella (VAR1) and the combination of DTP4, Polio3, and MMR1 (4-3-1 combination). The statewide coverage rate for the 4-3-1 combination (that is, DTP4, Polio3, MMR1) was 79%. Even though not required for school entry, almost half (46.8%) of the children were vaccinated for VAR1 and this is a statistically significant increase compared to the 34% in previous survey. Statistically significant increases in coverage rates were also observed for HepB3 and statistically significant decreases were observed in coverage rates for Polio3.

Counties were grouped together based on their population density and then mean coverage rates were compared among these groups. Counties which were "sparsely populated" had higher mean coverage rates than counties with greater population densities (Moderately populated, Urban).

As in previous years, coverage rates were also calculated at 4, 6, 8, 17, and 20 months of age in order to determine at which age coverage rates begin to decrease. At 4 months of age, 93% of the children were up-to-date for immunizations. However, as the number of immunizations required increased at each age point, the coverage rates decreased. Immunization coverage rates declined by 20 percentage points between 4 and 8 months of age. After 8 months of age, immunization coverage rates began to increase until they reached 79% at 2 years of age.

Overall, Kansas immunization coverage rates for the 4-3-1 combination have steadily increased from 57% in 1990-1991 to 80% in 2001-2002 for the

4-3-1 combination. Continued assessment and evaluation of the immunization rates are necessary to monitor progress toward the Healthy Kansas 2010 goal of 90% immunization coverage.

OUTBREAK OF UNEXPLAINED RESPIRATORY ILLNESS AMONG FOOTBALL PLAYERS - KANSAS, 2002

Background: On August 20 2002, the Kansas Department of Health and Environment (KDHE) was notified by a physician's assistant of a possible outbreak of illness among football players at University A. The two players who sought medical care had high fever, chills, sweats, muscle aches, and headache and were hospitalized for shortness of breath. An additional 20 individuals of the 89 football players and two coaches of the 18-member staff also reported similar symptoms on August 18 and 19.

Methods: In conjunction with the local health department, KDHE conducted an on-site retrospective cohort investigation to obtain a diagnosis, to determine the scope of the respiratory outbreak, and to identify possible sources of exposure. Questionnaires were administered to collect data about the illness among all ill team members and to gather information about potential sources of exposure or risk factors among both ill and non-ill members. Interviews with university staff, chart reviews of the hospitalized players, assessments of the environmental facilities, and diagnostic testing of specimens from 10 players were also conducted.

Results: Of the 27 ill team members, 22 met the case definition (Slide #1), representing a 21% overall attack rate of illness among the 107 football players and staff. Almost 90% of the cases reported headache, chills, and sweats on August 18 or 19 (Slide #2 and #3). Retrospective cohort analyses of the risk factor information revealed that exposure to the training room had a higher association with illness when compared to other risk factors (estimated risk ratio [RR] = 6.03; 95% confidence [CI] = 1.50, 24.27; p-value = 0.002) (Slide #4). Of the diagnostic tests performed, no causative organism was identified (Slide #5).

Discussion: Individuals who were exposed to the training room were six times more likely to become ill compared to individuals who were not exposed to the training room. Exposure to the training room may have been a plausible source of infection for one of two reasons: (1) personal closeness resulting in person-to-person transmission of respiratory agents or (2) exposure to an environmental agent present in the room resulting in point-source transmission. *Mycoplasma pneumoniae*, a respiratory organism that is easily spread, had been isolated from one hospitalized case; however, no additional positive results were obtained to support the possibility of person-to-person transmission. Moreover, none of the six trainers, who spent most of their time in the training room, reported illness, and no additional cases among players and contacts outside of the football team were identified. A point-source exposure to an inflammatory irritant in the training room could also not be validated because no environmental sampling was conducted.

Conclusions: A definitive conclusion regarding the cause and modality of spread of the illness could not be made in the absence of a laboratory-confirmed diagnosis. Nonetheless, the pattern of spread observed by the epidemic curve and the results from

the data analyses were highly suggestive of a point-source transmission, with the training room serving as the most likely location for transmission to occur. Though no specific agent was identified, good handwashing techniques, restriction of ill players from participating in team events, and regular disinfection of shared equipment are public health measures that possibly helped to control the spread of this disease and could help prevent similar incidents from occurring in the future.

Outbreak of Unexplained Respiratory Illness among Football Players Kansas, 2002

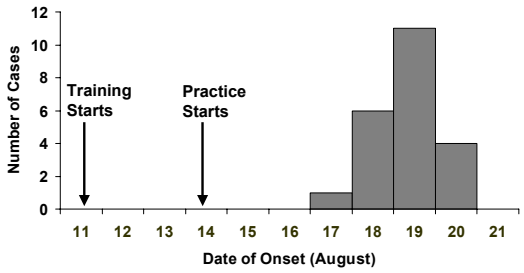
Slide 1. Case Definition

- An individual meeting any of the following criteria from August 18–21:
  - a) Fever ≥ 101° F alone,
  - b) Self-reported fever + headache & chills, or
  - c) Chills, sweats, & headache

Slide 2. Symptoms (n=22)

Symptom	Number	Percent (%)
Headache	21	95.4
Chills	21	95.4
Sweats	20	90.9
Shortness of Breath	19	86.4
Fatigue	19	86.4
Fever	18	81.8
Documented $101º F	12	54.6

Slide 3. Epidemic Curve (n = 22)



Slide 4. Attack Rates by Exposure

	Exposed		Not Exposed			
Area	Sick	Not Sick	Sick	Not Sick	Risk Ratio	95% C.I.
Training Room	20 (34%)	38 (66%)	2 (6%)	33 (94%)	6.0	1.5, 24.3
Whirlpool	3 (100%)	0	19 (21%)	71 (76%)	4.1	2.4, 7.0
Hot Tub	6 (86%)	1 (14%)	16 (19%)	70 (81%)	4.6	2.7, 7.9
Shower	15 (26%)	43 (74%)	7 (20%)	28 (80%)	1.3	0.6, 2.9
Locker Room	22 (24%)	71 (76%)	0	0	N/A	N/A

Slide 5. Results of Diagnostic Testing

- 10 players (6 ill, 4 non-ill)
- Viral culture – no growth
- Blood culture – no growth
- Serology – no significant changes in titer
  - Respiratory Syncytial Virus
  - Human Parainfluenza Virus 1, 2, and 3
  - Human Metapneumovirus
  - Adenovirus
  - *Mycoplasma pneumoniae*
  - *Legionella pneumophila* serogroup 1
  - *Histoplasma capsulatum*

TUBERCULOSIS AMONG US-BORN AND FOREIGN-BORN PERSONS–KANSAS, 1998-2002

Background: In Kansas, the case rate of active tuberculosis (TB) has been increasing since 1998. During the same time period, the TB case rate for the United States has been decreasing. One hypothesis for the rising rates in Kansas is that the number of TB cases among foreign-born persons is increasing. This study describes trends and characteristics of active cases of TB among US-born and foreign-born persons and makes recommendations about TB prevention and control activities accordingly.

Methods: A descriptive epidemiology study was conducted using data available through Kansas' electronic disease surveillance system (HAWK) of active TB cases from 1998-2002. Demographics, risk factors, clinical characteristics, and treatment were assessed. Recommendations were made based on key results from the study.

Results: There are rising rates of TB cases in Kansas (2.0 cases per 100,000 persons in 1998 and 3.2 cases/100,000 in 2002) with 54% (195/363) occurring among foreign-born.

The traditional TB risk factors (i.e. homelessness, alcoholism, *etc*.) are significantly associated with US-born cases but not foreign-born cases. Risk factors for foreign-born cases include birth in a TB-endemic country and residence in the US ≤ 2 years. Mexico is the most common birth country, but 53% of foreign-born cases come from Asian countries. The most common Asian birth countries among foreign-born are Vietnam [19% (38/195)] and India [10% (20/195)].

Clinical characteristics are similar between US-born and foreign-born cases. Human immunodeficiency virus (HIV) test rates are similar between US-born and foreign-born cases; however, HIV tests are not always offered (19% test not offered or unknown among cases 25-44 years old) to active TB cases.

Rates of directly observed therapy (DOT) and completion of therapy are similar between US-born and foreign-born cases. DOT is given to 80% (260/323) of active TB cases (among those receiving therapy), and completion of therapy is higher among those receiving DOT than those not receiving DOT (see slide #14). Multiple drug-resistant (MDR) isolates are being cultured more frequently (0 in 2000, 2 in 2001, and 2 in 2002), and 75% (3/4) of MDR cases have occurred among foreign-born persons.

Conclusions: Foreign-born cases are an important component of active TB cases in Kansas and an increasing number are coming from Asia. The most common risk factors among foreign-born cases include birth in a TB-endemic country and residence in the US less than two years. MDR is on the rise and is primarily found among foreign-born persons.

Recommendations: TB programs must learn to successfully work with Asian populations through culturally sensitive methods and appropriate written materials.

Foreign-born persons should be screened within two years of arrival. TB programs should ensure that all international university students get screened as well as consider non-traditional screening locations to improve screening rates. TB isolates need to be sent to the state laboratory in a timely way to ensure rapid identification of MDR isolates.

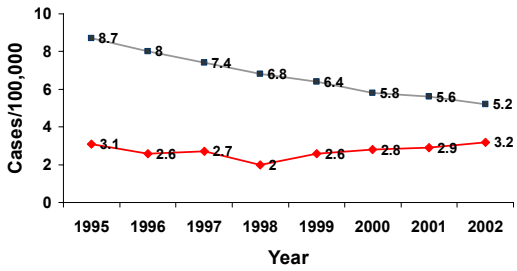
Tuberculosis Among US-Born and Foreign-Born Persons in Kansas, 1998-2002

Objectives

- To describe trends and characteristics of active cases of tuberculosis with regards to:
  - Demographics
  - Clinical Characteristics
  - Risk factors
  - Treatment
- To make recommendations about TB prevention and control activities

2

Tuberculosis Rate, Kansas and U.S.A., 1995-2002



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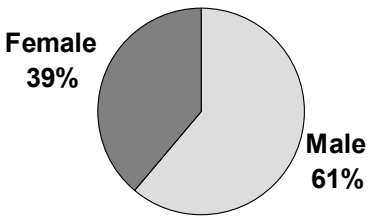
Tuberculosis Cases and Case Rates Among US-Born and Foreign-Born, Kansas 1998-2002

Case Number (%) [Rate]

	1998	1999	2000	2001	2002	Overall	
US-Born	24 (44)	39 (57)	35 (47)	31 (40)	39 (44)	168 (46)	[1.3]
For-Born	30 (56)	29 (43)	40 (53)	47 (60)	49 (56)	195 (54)	[28.9]
Total	54 (100) [2.0]	68 (100) [2.6]	75 (100) [2.8]	78 (100) [2.9]	88 (100) [3.2]	363 (100	[2.7]

4

Sex Distribution, all cases, Kansas, 1998-2002



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Age Distribution, All Cases, Kansas, 1998-2002

Case Numbers (%)

Age, y	All Cases	US-Born	Foreign-Born
< 5	26 (7)	21 (13)	5 (3)
5 - 15	11 (3)	5 (3)	6 (3)
16-24	47 (13)	3 (2)	44 (23)
25-44	131 (36)	53 (32)	78 (40)
45-64	81 (22)	41 (24)	40 (21)
≥ 65	67 (19)	45 (27)	22 (11)
Total	363 (100)	168 (100)	195 (100)

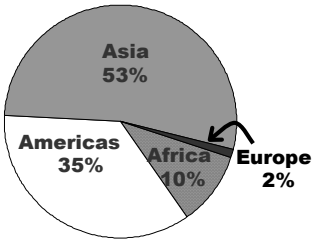
6

Tuberculosis Risk Factors

- All of the following risk factors were significantly greater for US-born cases than foreign-born cases
  - Excess alcohol use
  - Injection drug use
  - Noninjection drug use
  - Occupation – Unemployed, Healthcare worker, Correctional worker, Migrant farm worker
  - Homeless
  - TB diagnosed in correctional facility
  - TB diagnosed in long-term care facility

7

Birth Country Among Foreign-Born Cases (n=195) by Continent, 1998-2002



Top 5 Asian Countries

#1: Vietnam	38 (19%)
#2: India	20 (10%)
#3: Laos	8 (4%)
#4: S. Korea	6 (3%)
#5: Philippines	6 (3%)

8

Duration of US Residence Prior to Diagnosis, Kansas, 1998-2002

Years	No.	%	Cum. No.	Cum. %
<1	49	25	49	25
1	28	14	77	39
2	13	7	90	46
3	12	6	102	52
4	6	3	108	55
5	9	5	117	60
6-10	22	11	139	71
>10	38	20	177	91
Unknown	18	9	195	100
Total	195	100	195	100

9

Clinical Characteristics, All cases, Kansas, 1998-2002

- None of the following were significantly different between US-born and foreign-born cases
  - Few (4%) had a history of TB
  - Most (74%) were culture confirmed
  - Nearly half (44%) were sputum smear positive
  - Disease site
    - Pulmonary Only 71%
    - Pulmonary + Extrapulmonary 6%
    - Extrapulmonary Only 24%
  - Most (79%) had an abnormal chest radiograph
    - 12 % had cavitary lesions

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Tuberculin Skin Test at Diagnosis, All Cases, Kansas, 1998-2002*

	Case Numbers (%)		
Test Status	All Cases	US-Born	Foreign-Born
Negative	44 (16)	36 (31)	8 (5)
Positive	225 (84)	79 (69)	146 (95)
Total	269 (100)	115 (100)	154 (100)

* Among patients to whom a tuberculin skin test (TST) was placed, and the results were known

11

Sputum Culture among Cases with Pulmonary Primary Site, Kansas, 1998-2002*

	Case Numbers (%)		
Culture Status	All Cases	US-Born	Foreign-Born
M. tb +	165 (71)	73 (78)	92 (67)
M. tb -	66 (29)	21 (22)	45 (33)
Total	231 (100)	94 (100)	137 (100)

* Among patients whose culture result was known

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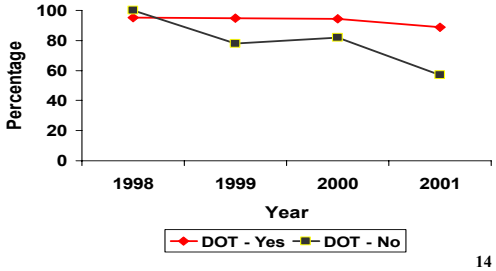
HIV Status among Cases 25-44 Years of Age, Kansas, 1998-2002

HIV Serostatus	Case Number (%)
Positive	5 (4)
Negative	85 (65)
Indeterminate	0 (0)
Patient refused	11 (8)
Test not offered	14 (11)
Test done, results unknown	5 (4)
Unknown	11 (8)
Total	131 (100)

13

Completion of Therapy by DOT Status Among Pulmonary Cases, Kansas, 1998-2001



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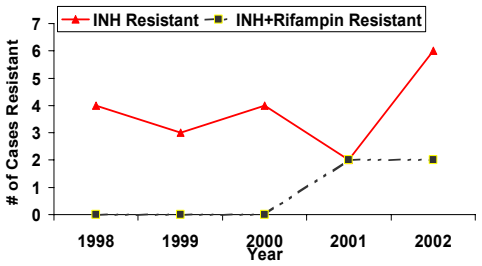
INH and Rifampin Drug Resistance, Kansas, 1998-2002



❖75 % of resistant cases are foreign-born

15

Conclusions

- Rising number of TB cases in Kansas
  - Greater than 50% are foreign-born
- Traditional TB risk factors useful for US-born cases
- Risk factors for foreign-born cases
  - Born in TB endemic country
  - Recent arrival to US

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Conclusions

- Mexico is #1 birth country, but >50% of foreign-born cases from Asian countries
- Clinical characteristics similar between US-born and foreign-born cases
- HIV test not always offered
  - HIV – TB co-infection may be missed

17

Conclusions

- DOT rates are good
- Completion of therapy better for those on DOT
  - DOT is the standard for all pulmonary cases
- Drug resistant isolates primarily found among foreign-born
  - MDR is on the rise

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Recommendations

- **Learn to successfully work with Asian populations**
  - **Culturally sensitive methods i.e. consider religious and cultural beliefs and gender roles**
  - **Appropriate written materials**
- **Screening of foreign-born persons within two years of arrival**
  - **All international university students must be screened– (9 cases over past 5 years [1 MDR])**
  - **Non-traditional locations – churches, Asian markets, herbalists, large corporations**

Recommendations

- **TB isolates need to be sent to state laboratory sooner to ensure rapid identification of MDR isolates**

SECTION III – APPENDICIES

2002-2003 KANSAS NOTIFIABLE DISEASE FORM

Today's Date: ____ / ____ /____

Patient's Name: _____

Last First Middle

Patient's Occupation: _____

Day Phone: _____ **Evening Phone:** _____

Street Address: _____

City: _____ **Zip:** _____ **County:** _____

Race: Native American Asian Black Pacific Islander White

Ethnicity: Hispanic Not Hispanic Unknown

Sex: M F **Date of Birth:** _____ / _____ / _____ **Age:** _____

Disease Name: _____

Dates:
Onset: ___ / ___ /____ Diagnosis: ___ / ___/ ___ First reported to you: ___ / ___/ ___

PHYSICIAN NAME:_____ **PHYSICIAN PHONE:**_____

Outbreak associated? Y N **Hospitalized?** Y N **Died?** Y N

Hospital**:**_____ City where hospital located: _____

Laboratory results attached? Y N

Name of person reporting: _____ **Phone:** _____

Comments: _____

_____

Mail reports to your local health department or to: BEDP - Epidemiologic Services Section, 1000 SW Jackson, Suite 210, Topeka, KS 66612-1274. Reports can also be ***faxed toll free*** to: 1-877-427-7318.

(Rev. 11/2003)

2002 - 2003 REPORTABLE DISEASES IN KANSAS for health care providers, hospitals, and laboratories
(K.S.A. 65-118, 65-128, 65-6001 through 65-6007, K.A.R. 28-1-2, 28-1-4, and 28-1-18)

Acquired Immune Deficiency Syndrome (AIDS);
Amebiasis;
Anthrax; ☎
Botulism; ☎
Brucellosis;
Campylobacter infections;
Chancroid;
Chlamydia trachomatis genital infection;
Cholera; ☎
Cryptosporidiosis**;**
Diphtheria***;***
Ehrlichiosis;
Encephalitis, infectious (includes West Nile virus);
Eschericia coli O157:H7 (and other enterohemorrhagic, enteropathogenic and enteroinvasive *E. coli)*; ⓘ
Giardiasis;
Gonorrhea;
Haemophilus influenza, invasive disease;
Hantavirus Pulmonary Syndrome;
Hemolytic uremic syndrome, postdiarrheal;
Hepatitis, viral (acute and chronic);
Hepatitis B during pregnancy;
Human Immunodeficiency Virus (HIV);
Legionellosis;
Leprosy (Hansen disease);
Listeriosis;
Lyme disease;
Malaria;
Measles (rubeola); ☎
Meningitis, arboviral (includes West Nile virus);
Meningitis, bacterial; ☎
Meningococcemia; ⓘ☎
Mumps; ☎
Pertussis (whooping cough)***;*** ☎
Plague; ☎
Poliomyelitis; ☎
Psittacosis;
Q Fever; ☎
Rabies, human and animal; ☎
Rocky Mountain Spotted Fever;
Rubella, including congenital rubella syndrome; ☎
Salmonellosis, including typhoid fever; ⓘ
Shigellosis; ⓘ
Smallpox; ☎
Streptococcal invasive disease, Group A Streptococcus or Streptoco
Syphilis, including congen
Tetanus;
Toxic shock syndrome, streptococcal and staphylococcal
Trichinosis;
Tuberculosis, active disease; ⓘ☎
Tuberculosis, latent infection;
Tularemia;
Varicella (chickenpox) deaths;
Viral hemorrhagic fever; ☎
Yellow fever

In addition, laboratories must report:

- ALL blood lead levels, as of 12/2002 (KCLPPP)
- CD4+ T-lymphocyte count < 500/ µl or CD4+ T-lymphocytes <29% of total lymphocytes

---

Outbreaks, unusual occurrence of any disease, exotic or newly recognized diseases, and suspect acts of terrorism should be reported within 4 hours by telephone to the Epidemiology Hotline: 1-877-427-7317

☎ ***Bold*** -- Immediate telephone report of *suspect* or *confirmed* cases to KDHE toll free at **1-877-427-7317**.

ⓘ **Isolates must be sent to:** Division of Health and Environmental Laboratories
Forbes Field, Building #740
Topeka, KS 66620-0001
Phone: (785) 296-1636

Mail or fax reports to your local health department or to: BEDP - Epidemiologic Services Section
1000 SW Jackson, Suite 210
Topeka, KS 66612-1274

Fax: 1-877-427-7318 (toll free)

LIST OF REPORTABLE DISEASES IN KANSAS, 2001

Reportable by health care providers, hospitals, and laboratories

(K.S.A. 65-118, 65-128, 65-6001 through 65-6007, K.A.R. 28-1-2, 28-1-4, 28-1-18)

- Acquired Immune Deficiency Syndrome (AIDS)
- Amebiasis
- ***Anthrax***
- ***Botulism***
- Brucellosis
- Campylobacteriosis
- ***Chancroid***
- Chlamydia trachomatis infection
- ***Cholera***
- Cryptosporidiosis
- Diphtheria
- Ehrlichiosis
- Encephalitis, infectious (indicate infectious agent whenever possible)
- *Escherichia coli* O157:H7 and other enterohemorrhagic, enteropathogenic and enteroinvasive *E. coli* ¶
- Giardiasis
- Gonorrhea
- *Haemophilus influenzae*, invasive disease
- Hantavirus pulmonary syndrome
- Hemolytic uremic syndrome, postdiarrheal
- Hepatitis, viral (acute and chronic)
- Human Immunodeficiency Virus (HIV)
- Legionellosis
- Leprosy (Hansen's disease)
- Listeriosis
- Lyme disease
- Malaria
- ***Measles*** (rubeola)
- ***Meningitis,*** bacterial
- ***Meningococcemia*** ¶
- ***Mumps***
- ***Pertussis*** (whooping cough)
- ***Plague***
- ***Poliomyelitis***
- Psittacosis
- ***Q Fever***
- ***Rabies, human and animal***
- Rocky Mountain Spotted Fever
- ***Rubella***, including congenital rubella syndrome
- Salmonellosis, including typhoid fever ¶
- Shigellosis ¶
- ***Smallpox***

- Streptococcal invasive disease, Group A *streptococcus* or *Streptococcus* pneumoniae ¶
- Syphilis, including congenital syphilis
- Tetanus
- Toxic shock syndrome, streptococcal and staphylococcal
- Trichinosis
- ***Tuberculosi***s ¶
- Tularemia
- Varicella (chickenpox) deaths
- ***Viral hemorrhagic fever***
- Yellow Fever

Outbreaks, unusual occurrence of any disease, exotic or newly recognized diseases, and suspected acts of terrorism should immediately be reported by telephone: 1-877-427-7317 (toll free).

Bold -- Immediate telephone report of *suspect or confirmed* cases required to KDHE toll free at: 1-877-427-7317.

¶ Isolates must be sent to the Kansas Health and Environmental Laboratory.

Division of Health and Environmental Laboratories
Kansas Department of Health and Environment
Forbes Field, Building #740
Topeka, Kansas 66620-0001
Tel: (785) 296-1636

Disease Reporting and Public Health Emergencies:

- Toll-Free Phone 1-877-427-7317
- Toll-Free Fax 1-877-427-7318

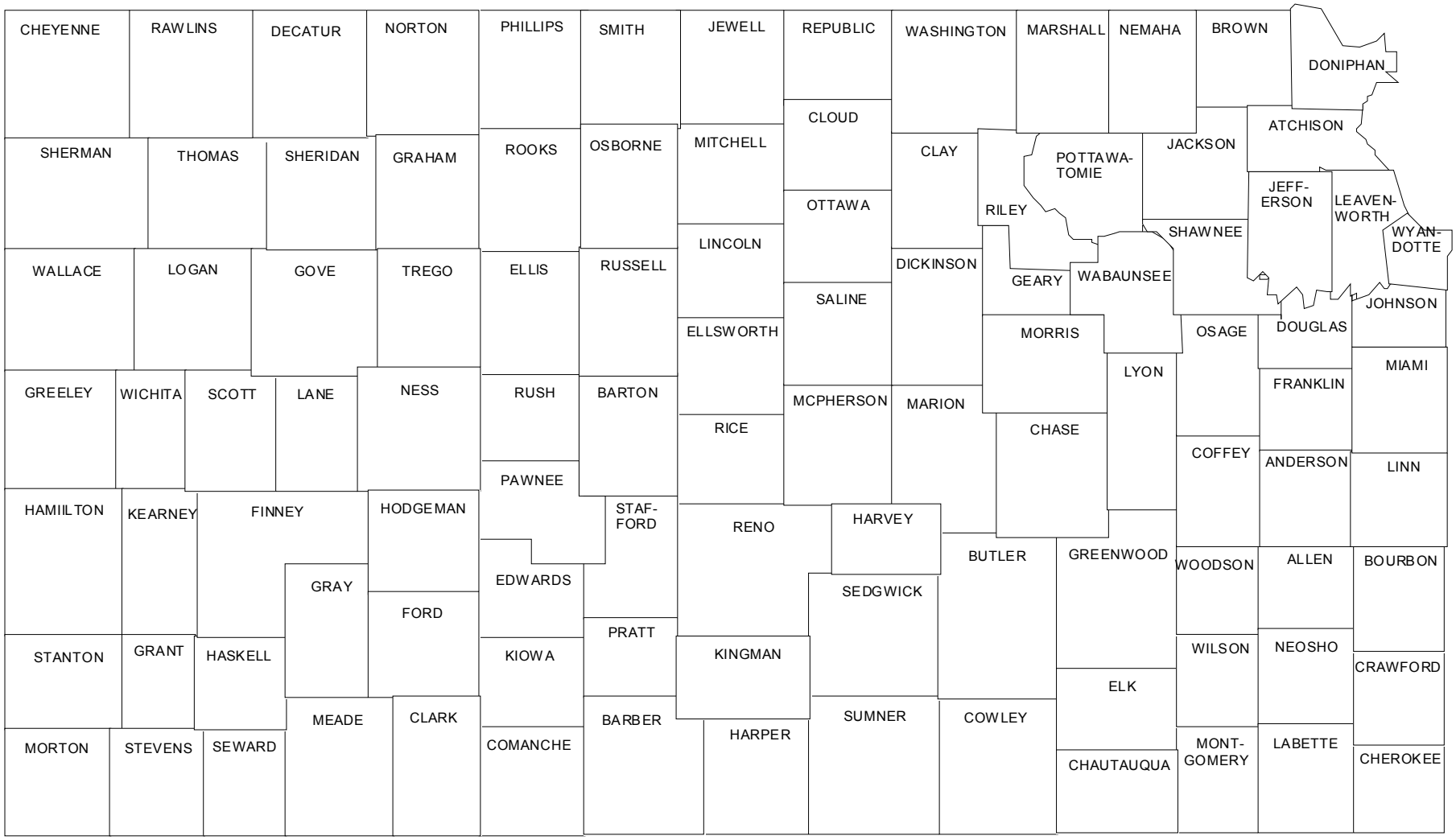
Additional conditions reportable by laboratories (K.A.R. 28-1-18 effective August 16, 1993 and 28-1-18 effective February 18, 2000)

- Blood lead level ($10 µg/dL for children <18 years of age; $25µg/dL for persons ≥ 18 years of age).
- CD4+ T-lymphocyte count <500/µl or CD4+ T-lymphocyte <29% of total lymphocytes.

Additional conditions reportable by hospitals (K.A.R. 28-1-4 effective May 1, 1986 and 28-1-22 effective December 24, 1990)

- Cancer
- Congenital malformations in infants under one year of age
- Fetal alcohol syndrome

MAP OF KANSAS



COUNTY ABBREVIATIONS

AL	Allen
AN	Anderson
AT	Atchison
BA	Barber
BT	Barton
BB	Bourbon
BR	Brown
BU	Butler
CS	Chase
CQ	Chatauqua
CK	Cherokee
CN	Cheyenne
CA	Clark
CY	Clay
CD	Cloud
CF	Coffey
CM	Comanche
CL	Cowley
CR	Crawford
DC	Decatur
DK	Dickinson
DP	Doniphan
DG	Douglas
ED	Edwards
EK	Elk
EL	Ellis
EW	Ellsworth
FI	Finney
FO	Ford
FR	Franklin
GE	Geary
GO	Gove
GH	Graham
GT	Grant
GY	Gray
GL	Greeley
GW	Greenwood
HM	Hamilton
HP	Harper
HV	Harvey
HS	Haskell
HG	Hodgeman
JA	Jackson
JF	Jefferson
JW	Jewell
JO	Johnson
KE	Kearny
KM	Kingman
KW	Kiowa
LB	Labette
LE	Lane
LV	Leavenworth
LC	Lincoln
LN	Linn
LG	Logan
LY	Lyon
MN	Marion
MS	Marshall
MP	McPherson
ME	Meade
MI	Miami
MC	Mitchell
MG	Montgomery
MR	Morris
MT	Morton
NM	Nemaha
NO	Neosho
NS	Ness
NT	Norton
OS	Osage
OB	Osborne
OT	Ottawa
PN	Pawnee
PL	Phillips
PT	Pottawatomie
PR	Pratt
RA	Rawlins
RN	Reno
RP	Republic
RC	Rice
RL	Riley
RO	Rooks
RH	Rush
RS	Russell
SA	Saline
SC	Scott
SG	Sedgwick
SW	Seward
SN	Shawnee
SD	Sheridan
SH	Sherman
SM	Smith
SF	Stafford
ST	Stanton
SV	Stevens
SU	Sumner
TH	Thomas
TR	Trego
WB	Wabaunsee
WA	Wallace
WS	Washington
WH	Wichita
WL	Wilson
WO	Woodson
WY	Wyandotte

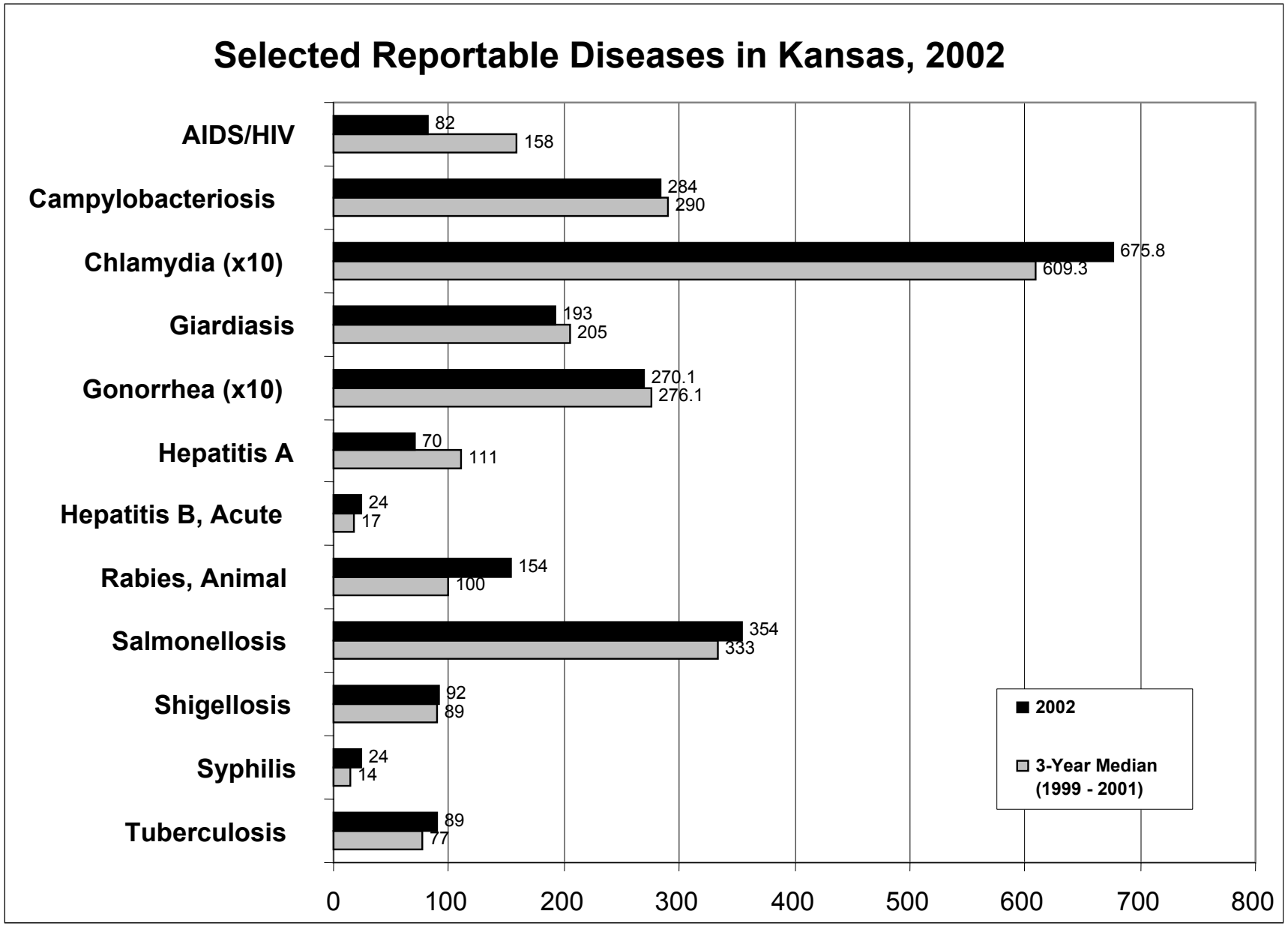

Selected Reportable Diseases in Kansas, 2002
AIDS/HIV
82
158
Campylobacteriosis
284
290
Chlamydia (x10)
675.8
609.3
Giardiasis
193
205
Gonorrhea (x10)
270.1
276.1
Hepatitis A
70
111
Hepatitis B, Acute
24
17
Rabies, Animal
154
100
Salmonellosis
354
333
Shigellosis
92
89
Syphilis
24
14
Tuberculosis
89
77
2002
3-Year Median (1999 - 2001)
0
100
200
300
400
500
600
700
800

TABLE 2. REPORTABLE DISEASE CASES BY YEAR, KANSAS, 1993-2002

DISEASE	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
AIDS/HIV*	358	227	286	135	145	87	127	289	158	137
AMEBIASIS	22	15	2	8	9	5	9	5	2	4
ANTHRAX	0	0	0	0	0	0	0	0	0	0
BOTULISM, FOODBORNE	0	0	1	0	0	0	0	0	0	0
BOTULISM, INFANT	0	2	0	1	0	0	0	0	0	1
BOTULISM, OTHER	0	0	0	0	0	0	0	0	0	0
BRUCELLOSIS	0	0	0	1	0	0	0	1	1	0
CAMPYLOBACTERIOSIS	201	247	238	208	200	351	290	355	286	284
CHANCROID	1	5	2	2	0	1	0	0	0	0
CHLAMYDIA	5694	6393	5315	4448	4698	5446	6093	6057	6172	6758
CHOLERA	0	0	0	0	0	0	0	0	0	0
CRYPTOSPORIDIOSIS	-	1	31	11	14	11	2	9	4	16
DIPHTHERIA	0	0	0	0	0	0	0	0	0	0
E. coli O157:H7	11	25	29	33	30	39	31	31	28	32
EHRLICHIOSIS**	-	-	-	-	-	-	-	0	5	3
ENCEPHALITIS, INFECTIOUS	7	7	11	2	2	1	1	0	0	1
ENCEPHALITIS, SLE	0	0	0	0	0	0	0	0	0	0
ENCEPHALITIS, WEE	0	0	0	0	0	0	0	0	0	0
GIARDIASIS	385	415	395	237	230	226	220	205	178	193
GONORRHEA	3710	3682	2797	2043	2094	2574	2665	2795	2761	2701
HANSEN'S DISEASE	0	0	0	0	0	0	1	0	0	0
ANTAVIRUS PULM. SYN.	1	4	0	2	2	2	2	1	0	1
HEMOLYTIC UREMIC SYN.**	-	-	-	-	-	-	-	1	0	1

TABLE 2. REPORTABLE DISEASE CASES BY YEAR, KANSAS, 1993-2002

DISEASE	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
HEPATITIS A	79	111	162	393	262	109	66	111	181	70
HEPATITIS B, ACUTE	65	31	53	32	32	28	17	27	14	24
HEP, C/NON-A NON-B, ACUTE	16	18	18	16	13	2	1	9	8	5
LEAD $ 10 µg/dL	545	1034	1202	1171	779	886	770	94	262	283
LEGIONELLOSIS	7	6	8	6	7	11	0	4	1	1
LISTERIOSIS**	-	-	-	-	-	-	-	0	5	1
LYME DISEASE	55	17	23	36	4	11	16	17	2	7
MALARIA	3	7	3	7	4	10	5	7	6	13
MEASLES	2	1	1	1	0	0	0	2	0	0
MENINGITIS, HIB	4	3	2	3	0	1	2	0	0	1
MENINGITIS, OTHER	26	42	9	18	52	25	28	22	22	3
MENINGOCOCCAL DISEASE	36	28	28	27	26	37	23	11	15	15
MUMPS	1	1	0	2	1	2	3	0	2	2
PERTUSSIS	24	18	23	14	33	71	49	18	11	38
PLAGUE	0	0	0	0	0	0	0	0	0	0
POLIOMYELITIS	0	0	0	0	0	0	0	0	0	0
PSITTACOSIS	0	0	0	0	0	0	0	0	0	0
Q FEVER***	-	-	-	-	-	-	-	-	0	2
RABIES, ANIMAL	79	35	46	37	89	99	107	97	100	153
RABIES, HUMAN	0	0	0	0	0	0	0	0	0	0

*Became reportable in July, 1999.
**Became reportable in 2000.
***Became reportable in 2001.

TABLE 2. REPORTABLE DISEASE CASES BY YEAR, KANSAS, 1993-2002

DISEASE	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
RMSF	1	4	4	2	7	3	2	3	0	0
RUBELLA	0	0	1	0	0	36	0	0	1	0
RUBELLA, CONGENITAL	0	0	0	0	0	0	0	0	0	0
SALMONELLOSIS	299	397	363	419	446	363	333	378	314	354
SHIGELLOSIS	208	123	302	112	133	82	89	255	76	92
SMALLPOX***	-	-	-	-	-	-	-	-	0	0
STREP. INVASIVE	0	0	0	0	1	16	15	30	98	154
SYPHILIS, P AND S	129	74	47	28	32	12	14	6	26	24
SYPHILIS, CONGENITAL	3	2	2	0	0	0	0	1	2	0
SYPHILIS, ALL STAGES	282	188	147	136	174	106	95	67	93	80
TETANUS	2	1	2	0	0	0	1	1	2	0
TOXIC SHOCK SYNDROME	3	5	2	5	1	4	5	6	4	1
TRICHINOSIS	0	0	0	0	0	0	1	0	0	0
TUBERCULOSIS	83	84	89	73	78	56	69	77	80	89
TULAREMIA	3	7	10	3	4	4	2	11	7	2
TYPHOID FEVER	1	2	1	1	2	0	1	1	0	1
VARICELLA DEATHS**	-	-	-	-	-	-	-	0	0	1
VIRAL HEMMORRHAGIC FEVER***	-	-	-	-	-	-	-	-	0	0
YELLOW FEVER	0	0	0	0	0	0	0	0	0	0

*Became reportable in July, 1999.
**Became reportable in 2000.
***Became reportable in 2001.

TABLE 3. REPORTABLE DISEASE CASES BY COUNTY

	AL	AN	AT	BA	BT	BB	BR	BU	CS	CQ	CK	CN	CA	CY	CD	STATE
AIDS/HIV	0	0	0	0	*	0	*	*	0	0	0	0	*	0	*	**137**
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
BOTULISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
CAMPYLOBACTERIOSIS	0	1	1	0	1	0	1	9	0	2	2	0	2	1	1	**284**
CHLAMYDIA	13	8	30	12	52	27	22	80	1	2	19	2	3	3	7	**6758**
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**16**
E. coli, ENTEROPATHOGENIC	0	0	0	0	5	1	0	1	0	0	0	0	0	0	0	**41**
EHRLICHIOSIS	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	**3**
ENCEPHALITITS, WEST NILE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	**19**
GIARDIASIS	1	1	1	0	4	0	0	4	0	0	0	1	0	1	1	**193**
GONORRHEA	4	1	9	3	4	5	1	18	0	0	1	0	1	2	2	**2701**
H. influenzae, INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
HANTAVIRUS PULM. SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEMOLYTIC UREMIC SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEPATITIS A	0	0	0	0	24	1	0	1	0	0	0	0	0	0	0	**70**
HEPATITIS B, ACUTE	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**24**
HEPATITIS C, ACUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
LEAD $ 10 µg/dL	2	0	2	0	4	2	0	0	0	0	6	0	0	0	0	**283**
LEGIONELLOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LISTERIOSIS	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
LYME DISEASE	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**7**
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**13**
MENINGITIS, BACTERIAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
MENINGOCOCCAL DISEASE	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
PERTUSSIS	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	**38**
Q FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
RABIES, ANIMAL	0	0	0	2	1	1	0	8	1	0	1	0	1	11	0	**153**
SALMONELLOSIS	1	1	0	0	4	1	2	2	0	0	0	0	0	1	2	**354**
SHIGELLOSIS	0	0	1	0	1	1	0	0	0	0	4	0	0	0	0	**92**
STREP., INVASIVE	0	0	0	0	3	0	1	2	0	0	0	0	1	2	0	**165**
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**24**
SYPHILIS, ALL STAGES	0	0	0	0	0	0	0	4	0	0	0	0	0	0	1	**80**
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
TUBERCULOSIS	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**89**
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
VARICELLA DEATHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**

TABLE 3. REPORTABLE DISEASE CASES BY COUNTY

	CF	CM	CL	CR	DC	DK	DP	DG	ED	EK	EL	EW	FI	FO	FR	STATE
AIDS/HIV	0	0	*	0	0	0	0	*	0	0	*	0	*	*	0	**137**
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
BOTULISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
CAMPYLOBACTERIOSIS	0	0	0	4	0	0	1	14	2	0	5	0	36	3	2	**284**
CHLAMYDIA	14	0	81	100	3	24	6	329	0	0	58	3	126	80	47	**6758**
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	**16**
E. coli, ENTEROPATHOGENIC	0	0	0	0	0	0	0	1	0	0	0	0	6	0	0	**41**
EHRLICHIOSIS	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**3**
ENCEPHALITITS, WEST NILE	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	**19**
GIARDIASIS	1	0	2	2	0	2	1	3	0	0	4	0	6	0	3	**193**
GONORRHEA	0	0	15	17	0	0	2	70	0	2	2	0	26	25	0	**2701**
H. influenzae, INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
HANTAVIRUS PULM. SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEMOLYTIC UREMIC SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEPATITIS A	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	**70**
HEPATITIS B, ACUTE	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	**24**
HEPATITIS C, ACUTE	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	**5**
LEAD $ 10 µg/dL	0	0	8	6	0	4	1	0	2	0	6	0	2	2	4	**283**
LEGIONELLOSIS	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
LISTERIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LYME DISEASE	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	**7**
MALARIA	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	**13**
MENINGITIS, BACTERIAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
MENINGOCOCCAL DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
PERTUSSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**38**
Q FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
RABIES, ANIMAL	0	2	2	2	0	2	0	2	1	1	3	1	0	9	1	**153**
SALMONELLOSIS	2	0	6	5	0	4	1	11	0	0	10	1	13	8	2	**354**
SHIGELLOSIS	0	0	0	4	0	0	0	1	0	0	0	0	1	1	0	**92**
STREP., INVASIVE	0	0	0	0	1	0	0	6	0	0	0	0	1	0	0	**165**
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**24**
SYPHILIS, ALL STAGES	0	0	0	0	0	0	0	1	0	0	0	0	1	1	2	**80**
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
TUBERCULOSIS	0	0	0	0	0	0	0	3	0	0	2	0	2	6	1	**89**
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
VARICELLA DEATHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**

TABLE 3. REPORTABLE DISEASE CASES BY COUNTY

	GE	GO	GH	GT	GY	GL	GW	HM	HP	HV	HS	HG	JA	JF	JW	STATE
AIDS/HIV	*	*	0	*	0	0	0	0	0	0	0	0	0	0	0	**13**
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
BOTULISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
CAMPYLOBACTERIOSIS	0	0	0	2	2	0	0	0	0	1	0	1	1	2	0	**28**
CHLAMYDIA	214	0	0	21	3	2	10	6	7	43	1	0	19	20	1	**67**
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**16**
E. coli, ENTEROPATHOGENIC	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**41**
EHRLICHIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
ENCEPHALITITS, WEST NILE	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**19**
GIARDIASIS	0	0	1	0	0	0	0	0	0	2	0	0	3	0	0	**19**
GONORRHEA	66	0	0	3	0	0	0	1	0	6	0	0	2	4	0	**27**
H. influenzae, INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
HANTAVIRUS PULM. SYN.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
HEMOLYTIC UREMIC SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEPATITIS A	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	**70**
HEPATITIS B, ACUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**24**
HEPATITIS C, ACUTE	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**5**
LEAD $ 10 µg/Dl	0	0	0	0	0	0	2	0	1	1	0	0	3	3	0	**28**
LEGIONELLOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LISTERIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LYME DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**7**
MALARIA	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**13**
MENINGITIS, BACTERIAL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**3**
MENINGOCOCCAL DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
PERTUSSIS	0	0	0	4	0	0	0	0	0	2	0	0	0	0	0	**38**
Q FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
RABIES, ANIMAL	1	0	0	0	9	0	2	0	1	1	2	1	1	1	0	**15**
SALMONELLOSIS	9	1	3	0	0	1	0	0	1	4	0	0	1	1	0	**35**
SHIGELLOSIS	0	0	0	1	0	0	0	0	0	2	0	0	2	0	0	**92**
STREP., INVASIVE	0	0	0	0	0	0	0	0	0	1	0	0	1	3	0	**16**
SYPHILIS, P AND S	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**24**
SYPHILIS, ALL STAGES	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**80**
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
TUBERCULOSIS	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	**89**
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
VARICELLA DEATHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**

TABLE 3. REPORTABLE DISEASE CASES BY COUNTY

	JO	KE	KM	KW	LB	LE	LV	LC	LN	LG	LY	MN	MS	MP	ME	STATE
AIDS/HIV	18	0	0	0	*	0	6	0	*	0	0	0	0	*	0	**137**
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
BOTULISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
CAMPYLOBACTERIOSIS	36	0	1	0	1	2	3	1	0	1	6	0	5	1	1	**284**
CHLAMYDIA	687	4	5	0	30	0	164	3	8	3	114	10	5	30	1	**6758**
CRYPTOSPORIDIOSIS	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	**16**
E. coli, ENTEROPATHOGENIC	9	0	1	0	0	0	2	0	1	0	2	0	0	0	0	**41**
EHRLICHIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
ENCEPHALITITS, WEST NILE	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**19**
GIARDIASIS	49	1	0	0	0	0	4	1	1	0	1	0	2	0	0	**193**
GONORRHEA	185	0	0	1	4	0	74	0	2	0	32	0	1	2	0	**2701**
H. influenzae, INVASIVE	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	**5**
HANTAVIRUS PULM. SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEMOLYTIC UREMIC SYN.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEPATITIS A	6	0	0	0	1	0	1	0	0	0	0	0	0	0	0	**70**
HEPATITIS B, ACUTE	4	0	0	0	1	0	1	0	0	0	0	0	0	1	0	**24**
HEPATITIS C, ACUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
LEAD $ 10 µg/dL	28	0	1	0	1	0	3	3	0	0	8	1	1	0	0	**283**
LEGIONELLOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LISTERIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LYME DISEASE	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**7**
MALARIA	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**13**
MENINGITIS, BACTERIAL	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
MENINGOCOCCAL DISEASE	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	**8**
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
PERTUSSIS	4	0	0	0	0	0	1	0	1	0	0	0	2	1	0	**38**
Q FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
RABIES, ANIMAL	3	0	1	0	1	0	1	1	1	0	1	3	0	1	0	**153**
SALMONELLOSIS	38	0	1	1	1	0	6	3	2	0	4	1	8	3	7	**354**
SHIGELLOSIS	30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**92**
STREP., INVASIVE	24	0	0	0	0	0	3	0	0	0	0	0	0	0	0	**165**
SYPHILIS, P AND S	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**24**
SYPHILIS, ALL STAGES	7	0	0	0	0	0	3	0	0	0	1	0	0	1	0	**80**
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
TUBERCULOSIS	12	0	0	0	0	0	0	0	0	0	0	2	0	0	0	**89**
TULAREMIA	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
VARICELLA DEATHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**

TABLE 3. REPORTABLE DISEASE CASES BY COUNTY

	MI	MC	MG	MR	MT	NM	NO	NS	NT	OS	OB	OT	PN	PL	PT	STATE
AIDS/HIV	*	0	0	0	0	0	0	0	0	0	0	0	0	0	*	**137**
AMEBIASIS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**4**
BOTULISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
CAMPYLOBACTERIOSIS	1	0	0	0	0	0	0	2	0	1	0	2	0	1	1	**284**
CHLAMYDIA	49	9	83	2	4	1	34	2	2	22	0	5	9	2	16	**6758**
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**16**
E. coli, ENTEROPATHOGENIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**41**
EHRLICHIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
ENCEPHALITITS, WEST NILE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**19**
GIARDIASIS	1	3	1	0	0	1	1	0	0	1	3	0	1	1	1	**193**
GONORRHEA	6	1	22	0	0	3	2	0	0	1	0	3	1	0	2	**2701**
H. influenzae, INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
HANTAVIRUS PULM. SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEMOLYTIC UREMIC SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEPATITIS A	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	**70**
HEPATITIS B, ACUTE	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**24**
HEPATITIS C, ACUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
LEAD $ 10 µg/dL	0	0	5	0	0	0	4	0	0	1	0	0	0	0	1	**283**
LEGIONELLOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LISTERIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LYME DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**7**
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**13**
MENINGITIS, BACTERIAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
MENINGOCOCCAL DISEASE	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
PERTUSSIS	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	**38**
Q FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
RABIES, ANIMAL	1	2	1	2	0	2	2	2	0	1	0	0	4	0	11	**153**
SALMONELLOSIS	3	0	3	0	0	0	2	0	0	4	2	1	0	1	2	**354**
SHIGELLOSIS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**92**
STREP., INVASIVE	0	0	1	0	0	0	1	0	0	3	0	0	1	0	0	**165**
SYPHILIS, P AND S	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**24**
SYPHILIS, ALL STAGES	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**80**
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
TUBERCULOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**89**
TULAREMIA	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
VARICELLA DEATHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**

TABLE 3. REPORTABLE DISEASE CASES BY COUNTY

	PR	RA	RN	RP	RC	RL	RO	RH	RS	SA	SC	SG	SW	SN	SD	STATE
AIDS/HIV	0	0	*	0	*	5	0	0	0	*	0	28	*	10	0	**137**
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	**4**
BOTULISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
CAMPYLOBACTERIOSIS	0	1	6	0	1	4	0	0	0	5	2	37	3	33	1	**284**
CHLAMYDIA	16	0	135	2	11	197	3	3	9	109	2	1686	50	605	0	**6758**
CRYPTOSPORIDIOSIS	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	**16**
E. coli, ENTEROPATHOGENIC	0	0	0	0	0	1	0	0	0	0	0	8	0	1	0	**41**
EHRLICHIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
ENCEPHALITITS, WEST NILE	2	0	3	0	3	0	0	0	0	0	0	0	0	2	0	**19**
GIARDIASIS	0	1	2	0	0	2	0	0	0	6	1	27	0	19	0	**193**
GONORRHEA	1	0	55	1	2	21	0	0	0	25	0	865	5	314	0	**2701**
H. influenzae, INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	**5**
HANTAVIRUS PULM. SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEMOLYTIC UREMIC SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEPATITIS A	0	0	1	0	0	2	0	0	0	0	0	11	7	2	0	**70**
HEPATITIS B, ACUTE	0	0	2	0	0	0	0	0	0	0	0	2	2	7	0	**24**
HEPATITIS C, ACUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
LEAD $ 10 µg/Dl	4	0	4	0	0	2	0	1	4	12	0	36	2	29	0	**283**
LEGIONELLOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LISTERIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LYME DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**7**
MALARIA	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	**13**
MENINGITIS, BACTERIAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
MENINGOCOCCAL DISEASE	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	**8**
MUMPS	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	**2**
PERTUSSIS	0	0	1	0	0	0	0	0	0	0	0	11	0	1	0	**38**
Q FEVER	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
RABIES, ANIMAL	4	0	0	4	0	8	0	1	3	6	0	6	1	2	0	**153**
SALMONELLOSIS	0	0	11	3	1	17	1	0	0	8	1	46	3	24	1	**354**
SHIGELLOSIS	0	0	2	0	0	0	0	0	0	0	0	17	1	16	0	**92**
STREP., INVASIVE	0	0	17	0	1	0	0	0	0	2	0	47	0	15	0	**165**
SYPHILIS, P AND S	0	0	0	0	0	1	0	0	0	0	0	3	0	5	0	**24**
SYPHILIS, ALL STAGES	0	0	2	0	0	1	0	0	0	0	0	14	1	15	0	**80**
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
TUBERCULOSIS	1	0	0	0	0	1	0	0	0	6	0	29	1	7	0	**89**
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
VARICELLA DEATHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**

TABLE 3. REPORTABLE DISEASE CASES BY COUNTY

	SH	SM	SF	ST	SV	SU	TH	TR	WB	WA	WS	WH	WL	WO	WY	STATE
AIDS/HIV	*	0	0	0	0	*	0	0	0	0	0	0	0	0	27	**137**
AMEBIASIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**4**
BOTULISM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**
CAMPYLOBACTERIOSIS	0	0	2	0	0	3	1	1	0	0	0	1	0	0	20	**284**
CHLAMYDIA	4	3	3	0	4	22	8	2	3	0	5	2	9	4	1058	**6758**
CRYPTOSPORIDIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**16**
E. coli, ENTEROPATHOGENIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**41**
EHRLICHIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
ENCEPHALITITS, WEST NILE	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	**19**
GIARDIASIS	0	0	0	0	0	3	0	0	2	0	0	0	0	0	13	**193**
GONORRHEA	2	1	1	0	1	7	1	2	0	0	0	0	0	0	754	**2701**
H. influenzae, INVASIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**5**
HANTAVIRUS PULM. SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEMOLYTIC UREMIC SYN.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
HEPATITIS A	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	**70**
HEPATITIS B, ACUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**24**
HEPATITIS C, ACUTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**5**
LEAD $ 10 µg/dL	1	0	0	1	0	0	0	0	0	1	0	0	3	0	65	**283**
LEGIONELLOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LISTERIOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
LYME DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**7**
MALARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**13**
MENINGITIS, BACTERIAL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
MENINGOCOCCAL DISEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**8**
MUMPS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
PERTUSSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**38**
Q FEVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
RABIES, ANIMAL	0	0	0	0	0	0	0	0	1	0	6	0	0	0	0	**153**
SALMONELLOSIS	1	1	2	0	1	4	2	0	5	0	1	0	3	0	25	**354**
SHIGELLOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	**92**
STREP., INVASIVE	0	1	0	0	1	1	0	0	3	0	0	0	0	0	22	**165**
SYPHILIS, P AND S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	**24**
SYPHILIS, ALL STAGES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	**80**
TOXIC SHOCK SYNDROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
TUBERCULOSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	**89**
TULAREMIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
VARICELLA DEATHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**

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